N8800-063E/064E

NEC Express5800/320Lc/320Lc-R User's Guide

1st Edition
Updated 4-2005
856-124966-901-A

PROPRIETARY NOTICE AND LIABILITY DISCLAIMER

The information disclosed in this document, including all designs and related materials, is the valuable property of NEC Corporation (NEC) and /or its licensors. NEC and/or its licensors, as appropriate, reserve all patent, copyright and other proprietary rights to this document, including all design, manufacturing, reproduction, use, and sales rights thereto, except to the extent said rights are expressly granted to others.

The NEC product(s) discussed in this document are warranted in accordance with the terms of the Warranty Statement accompanying each product. However, actual performance of each such product is dependent upon factors such as system configuration, customer data, and operator control. Since implementation by customers of each product may vary, the suitability of specific product configurations and applications must be determined by the customer and is not warranted by NEC.

To allow for design and specification improvements, the information in this document is subject to change at any time, without notice. Reproduction of this document or portions thereof without prior written approval of NEC is prohibited.

First Printing, January 2005
Copyright 2005
NEC Corporation
7-1 Shiba 5-Chome, Minato-Ku
Tokyo 108-8001, Japan
All Rights Reserved
Printed in Japan

Keep this User's Guide handy for quick reference when necessary.

SAFETY INDICATIONS

To use NEC Express5800 Series safely, follow the instructions in this User's Guide.

This guide explains components that pose a danger, types of dangers, and actions taken to prevent them; such components are labeled warning.

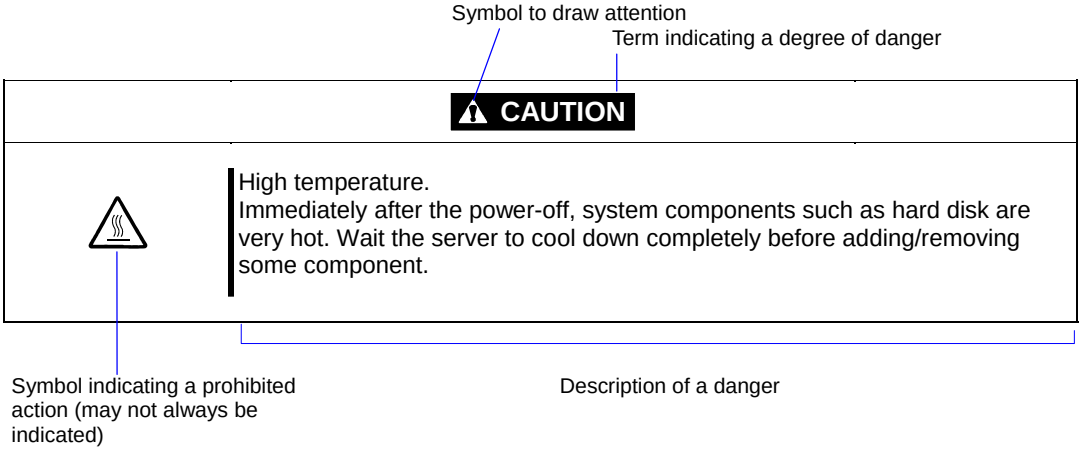
This guide and warning labels use “WARNING” and “CAUTION” to indicate a danger depending on the degree. These terms are defined as follows:

WARNING	Indicates a danger that could lead to a death or serious injury.
CAUTION	Indicates a danger that could lead to a burn, other injuries or damage to physical assets.

This guide uses the following three types of symbols to give indications and precautions against a danger. They are defined as follows:

	Indicates that there is a risk of danger. Each image symbolizes a particular type of danger. (Attention)
	Indicates what you must not do. Each image symbolizes a particular type of prohibition. (Prohibited actions)
	Indicates what you must do. Each image symbolizes a particular type of action necessary to avoid a danger. (Mandatory actions)

(Example)


Symbol to draw attention
Term indicating a degree of danger
CAUTION
High temperature.
Immediately after the power-off, system components such as hard disk are very hot. Wait the server to cool down completely before adding/removing some component.
Symbol indicating a prohibited action (may not always be indicated)
Description of a danger

SYMBOLS USED IN THIS USER'S GUIDE AND WARNING LABELS

Attention

	Indicates a risk of an electric shock.
	Indicates a risk of an injury due to heat.
	Indicates a risk of catching your fingers.
	Indicates a risk of a fire or smoke.
	Indicates a general precaution or warning that is not defined herein.
	Indicates a risk of losing eyesight due to laser beam.
	Indicates a risk of an injury or damage to physical assets due to a hazardous material.

Prohibited actions

	Indicates a general prohibition that is not defined herein.
	Do not disassemble, repair, or modify the equipment. There is a risk of an electric shock or fire.

Mandatory actions

	Unplug the server. There is a risk of an electric shock or fire.
	Indicates a general action to take that is not defined herein. Make sure to follow the instructions.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，

在這種情況下，使用者會被要求採取某些適當的對策.

This class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numériqeu de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

CE Statement

Warning: This is a Class A product. In residential environment, this product may cause radio interference, in which case the user may be required to take adequate measures (EN55022).

NOTE: This product provides resistance against hardware faults with its redundant hardware modules. However, this does not mean complete fault-tolerance is assured. For example, there is a risk of system down when:

- A fatal fault occurs in software.
- Both modules within a redundant hardware pair break down.
- A fatal fault occurs in a non-redundant component, such as the clock generator circuitry or the interconnect backplane.
- The entire system is cut off from AC power.

Trademarks

NEC EXPRESSBUILDER, NEC ESMPRO, and NEC Express5800/ft series are trademarks of NEC Corporation.

Stratus is a registered trademark of Stratus Technologies Bermuda Ltd.

Microsoft, Windows, Windows NT, and MS-DOS are registered trademarks of Microsoft Corporation in the United States and other countries.

Intel and Pentium are registered trademarks of Intel Corporation.

AT is a registered trademark of International Business Machines Corporation in the United States and other countries.

VERITAS is a registered trademark of VERITAS Software Corporation in the U.S. and other countries.

The VERITAS logo and VERITAS Volume Manager are trademarks of VERITAS Software Corporation.

Adobe, the Adobe logo, Acrobat, and the Acrobat logo are trademarks of Adobe Systems Incorporated.

Datalight is a registered trademark of Datalight, Inc. ROM-DOS is a trademark of Datalight, Inc.

Xeon is a trademark of Intel Corporation in the United States. DLT and DLTtape are trademarks of Quantum Corporation in the United States. QLogic and its logo are trademarks of QLogic Corporation in the United States. Fast!UTIL is a trademark of QLogic Corporation in the United States.

All other product, brand, or trade names used in this publication are the trademarks or registered trademarks of their respective trademark owners.

Microsoft Windows Server 2003 Standard Edition operating system and Microsoft Windows Server 2003 Enterprise Edition operating system are called Windows Server for short. Microsoft Windows 2000 Server operating system, Microsoft Windows 2000 Advanced Server operating system and Microsoft Windows 2000 Professional operating system are called Windows 2000 for short. Microsoft Windows NT Server network operating system version 3.51/4.0 and Microsoft Windows NT Workstation operating system version 3.51/4.0 are called Windows NT for short. Microsoft Windows Millennium Edition Operating System is called Windows Me for short. Microsoft Windows 98 operating system is called Windows 98 for short. Microsoft Windows 95 operating system is called Windows 95 for short.

Names used with sample applications are all fictitious. They are unrelated to any existing product names, names of organizations, or individual names.

To prevent voltage sag:

This product may be affected by voltage sag caused due to lightning. To prevent voltage sag, you are recommended to use an AC uninterruptible power supply (UPS) unit.

Notes:

(1) No part of this manual may be reproduced in any form without prior written permission of NEC Corporation.

(2) The contents of this manual are subject to change without prior notice.

(3) The contents of this manual shall not be copied or altered without prior written permission of NEC Corporation.

(4) All efforts have been made to ensure the accuracy of all information in this manual. If you find any part unclear, incorrect, or omitted in this manual, contact the sales agent where you purchased this product.

(5) NEC assumes no liability arising from the use of this product, nor any liability for incidental or consequential damage arising from the use of this manual regardless of (4) above.

PREFACE

Welcome to the NEC Express5800/ft series.

NEC Express5800/ft series is a “fault-tolerant (ft)” server focusing on “high reliability” in terms of fault-tolerance, in addition to “high performance,” “scalability,” and “general versatility” provided by NEC Express5800 series. In the event of trouble, its dual configuration will allow the system to instantaneously isolate the failed parts to assure non-stop running; operation will be moved smoothly from one module to the other, minimizing damage to it. You can use this NEC Express5800/ft series in a mission-critical system where high availability is required. By the use of Windows2003 operating system, it also provides outstanding openness for general-purpose applications, etc.

To make the best use of these features, read this User's Guide thoroughly to understand how to operate NEC Express5800/ft series.

ABOUT THIS USER'S GUIDE

This User's Guide helps a user to properly setup and use the product.

Consult this guide to ensure safety as well as to cope with trouble during a system setup and daily operation.

Keep this manual handy.

This User's Guide is intended for users who have a good knowledge on the basic use of Windows2003/NT operating systems and general I/O devices such as a keyboard and mouse.

How to Use This User's Guide

This guide consists of eight chapters and appendices. To help you find a solution quickly, the guide contains the following information:

For descriptions on setting up this product, see the separate volume “User’s Guide (Setup).” Before going on to main chapters, be sure to read “Precautions for Use.” These precautions are very important for using the product safely.

Chapter 1 Precautions for Use
This chapter describes precautions necessary to use the product safely and properly. Be sure to read this chapter before using the product. It also provides information on user support. It will be helpful when you need maintenance service, support, etc.

Chapter 2 General Description
This chapter describes what you should know about the product: its component names, functions, operating procedures as well as handling of devices and other parts.

Chapter 3 Windows Setup and Operation
This chapter describes setup and operation specific to the product when it is on Windows.

Chapter 4 System Configuration
This chapter describes how to make settings of built-in basic input/output system. It also describes factory-shipped parameters.

Chapter 5 Installing and Using Utilities
This chapter describes features and operating procedures of a standard utility “NEC EXPRESSBUILDER.” It also describes procedures to install and operate various software programs contained in its CD-ROM.

Chapter 6 Maintenance
This chapter describes maintenance procedures and use of maintenance tools. If you need to move the product for maintenance purposes, follow the steps provided in this chapter.

Chapter 7 Troubleshooting
If the product does not work properly, see this chapter before deciding that it is a breakdown.

Chapter 8 System Upgrade
This chapter describes procedures to add options and precautions. See also this chapter when you replace failed components.

Appendix A Specifications
This appendix lists specifications of the product.

Appendix B I/O Port Addresses
This appendix lists factory-assigned I/O port addresses.

Additional symbols

The following symbols are used throughout this User's Guide in addition to the caution symbols describe at the beginning.

IMPORTANT:	Important points or instructions to keep in mind when using the server or software
CHECK:	Something you need to make sure when using the server of software
TIPS:	Helpful information, something useful to know

Accessories

This product is shipped with various accessories. See the attached list to make sure everything is included and check the individual items. If some component is missing or damaged, contact your sales agent.

- Keep the accessories in a safe place. You will need them when you perform setup, addition of options, or replacement of failed components.
- To check NEC EXPRESSBUILDER components, see the attached list.
- Be sure to fill out and mail the software registration card that is attached to your operating system.
- Make backup copies of included floppy disks, if any. Keep the original disks as the master disks; use these copies in operation.
- Improper use of an included floppy disk or CD-ROM may alter your system environment. If you find something unclear, stop using them and contact your sales agent.

(This page is intentionally left blank.)

CONTENTS

PREFACE i
ABOUT THIS USER'S GUIDE ii

Chapter 1 Precautions for Use 1-1

WARNING LABELS 1-2
Tower Model 1-2
Rack-mount Model 1-4
PCI/CPU Modules 1-6
PRECAUTIONS FOR SAFETY 1-7
General 1-7
Use of Power Supply and Power Cord 1-9
Installation, Relocation, Storage and Connection 1-10
Cleaning and Handling of Internal Devices 1-12
During Operation 1-13
Rack-mount Model 1-14
For Proper Operation 1-15
TRANSFER TO THIRD PARTY 1-17
DISPOSAL OF EQUIPMENT AND CONSUMABLES 1-18
IF SYSTEM TROUBLE IS SUSPECTED 1-19
ABOUT REPAIR PARTS 1-19

Chapter 2 General Description 2-1

STANDARD FEATURES 2-2
HOW THE OPERATING SYSTEM SEES THE CPU MODULES 2-6
How CPU modules appear on Device Manager 2-6
How CPU modules appear on Task Manager 2-6
NAMES AND FUNCTIONS OF COMPONENTS 2-7
Front View 2-7
Front View (inside) 2-9
CD-ROM Drive 2-10
Rear View 2-11
CPU Module 2-13
PCI Module 2-15
Chassis Board Layout 2-16
LEDs 2-17
BASIC OPERATION 2-28
Locking and Unlocking the Front Bezel 2-28
Power ON 2-30
Power OFF 2-31
POST Check 2-32
Floppy Disk Drive 2-35
CD-ROM Drive 2-38

Chapter 3 Windows Setup and Operation 3-1

DISK OPERATIONS 3-2
Disks Operations Using Disk Management 3-3
Disk Operations Using the RDR (Rapid Disk Resync) Function 3-15

Replacing Failed Hard Disk Drives 3-24
CHANGE DRIVE LETTER 3-33
DUAL LAN CONFIGURATION 3-34
Overview 3-34
Configuring dual LAN 3-34
Removing dual LAN 3-37
CHECK THE DUPLICATING OPERATION OF MODULES 3-40
Evaluate Startup and Stop of PCI Modules 3-40
Evaluate Start and Stop of CPU Modules 3-43
NEC Express5800/ft series SERVICE PROGRAM CONFIGURATION 3-45

Chapter 4 System Configuration 4-1

SYSTEM BIOS ~ SETUP ~ 4-2
Starting SETUP Utility 4-3
Description of On-Screen Items and Key Usage 4-4
Configuration Examples 4-5
Menu and Parameter Descriptions 4-8
SCSI BIOS ~ *Fast!*UTIL ~ 4-29
Start 4-29
Configuration Settings 4-32
Scan SCSI Bus 4-36
SCSI Disk Utility 4-36
Select Host Adapter 4-36
Exit *Fast!*UTIL ~ Termination and Storage of *Fast!*UTIL ~ 4-37
Setting List for Optional SCSI Device 4-37
FORCED SHUTDOWN AND CLEAR 4-38
Forced Shutdown 4-38
Clear CMOS / Password (Configuring Motherboard Jumpers) 4-39

Chapter 5 Installing and Using Utilities 5-1

NEC EXPRESSBUILDER 5-2
Start Menu 5-2
NEC EXPRESSBUILDER Top Menu 5-4
Consoleless Menu 5-8
Master Control Menu 5-10
NEC ESMPRO Agent and Manager 5-11
Overview 5-11
NEC ESMPRO Agent 5-18
NEC ESMPRO Manager 5-27
Maintenance of NEC Express5800/ft series 5-43
NEC MWA ~ MANAGEMENT WORKSTATION APPLICATION ~ 5-73
Servers to be remotely managed by NEC MWA 5-73
Remote Management Configuration for the Server without Console 5-73

Chapter 6 Maintenance 6-1

DAILY MAINTENANCE 6-2
Checking Alert 6-2
Checking STATUS LEDs and LCD Display 6-2
Making Backup Copies 6-3

Cleaning 6-3
SYSTEM DIAGNOSTICS 6-7
Test Items 6-7
Startup and Exit of System Diagnosis 6-7
OFF-LINE MAINTENANCE UTILITY 6-9
Starting the Off-line Maintenance Utility 6-9
Features of Off-line Maintenance Utility 6-9
RELOCATING/STORING THE NEC Express5800/ft series 6-11

Chapter 7 Troubleshooting 7-1

TO LOCATE THE ERRORS 7-2
ERROR MESSAGES 7-3
Error Messages by LED Indication 7-3
Error Messages on the Liquid Crystal Display (LCD) 7-3
POST Error Messages 7-14
Error Notification by BEEP 7-20
Windows Server 2003, Enterprise Edition Error Messages 7-21
Server Management Application Error Message 7-22
SOLVING PROBLEMS 7-23
Problems with NEC Express5800/ft series 7-23
Event Log 7-33
Problems with NEC EXPRESSBUILDER 7-36
Problems with Master Control Menu 7-37
Problems with NEC ESMPRO 7-38
COLLECTION OF TROUBLE LOGS 7-46
Collection of Event Logs 7-46
Collection of Configuration Information 7-47
Collection of Diagnostic Information by Dr. Watson 7-47
COLLECTION OF THE MEMORY DUMP 7-48

Chapter 8 System Upgrade 8-1

SAFETY PRECAUTIONS 8-2
ANTI-STATIC MEASURES 8-3
PREPARING YOUR SYSTEM FOR UPGRADE 8-4
3.5-INCH HARD DISK DRIVE 8-5
Installing 3.5-inch Hard Disk Drive 8-7
Removing 3.5-inch Hard Disk Drive 8-9
Replacing 3.5-inch Hard Disk Drive 8-10
CPU MODULE 8-11
Removing CPU Module 8-12
Installing CPU Module 8-14
DIMM 8-16
Installing DIMM 8-18
Removing DIMM 8-19
Replacing DIMM 8-20
PROCESSOR (CPU) 8-21
Installation 8-22
Removing CPU 8-25
Replacing CPU 8-26

PCI MODULE 8-27
Precautions 8-28
Removing PCI Module 8-29
Installing PCI Module 8-31
PCI BOARD 8-33
Installing PCI Board 8-34
Removing PCI Board 8-39
Replacing PCI Board 8-40
Setup of Optional PCI Board 8-41

Appendix A Specifications A-1

Appendix B I/O Port Addresses B-1

Chapter 1

Precautions for Use

This chapter includes information necessary for proper and safe operation of the server.

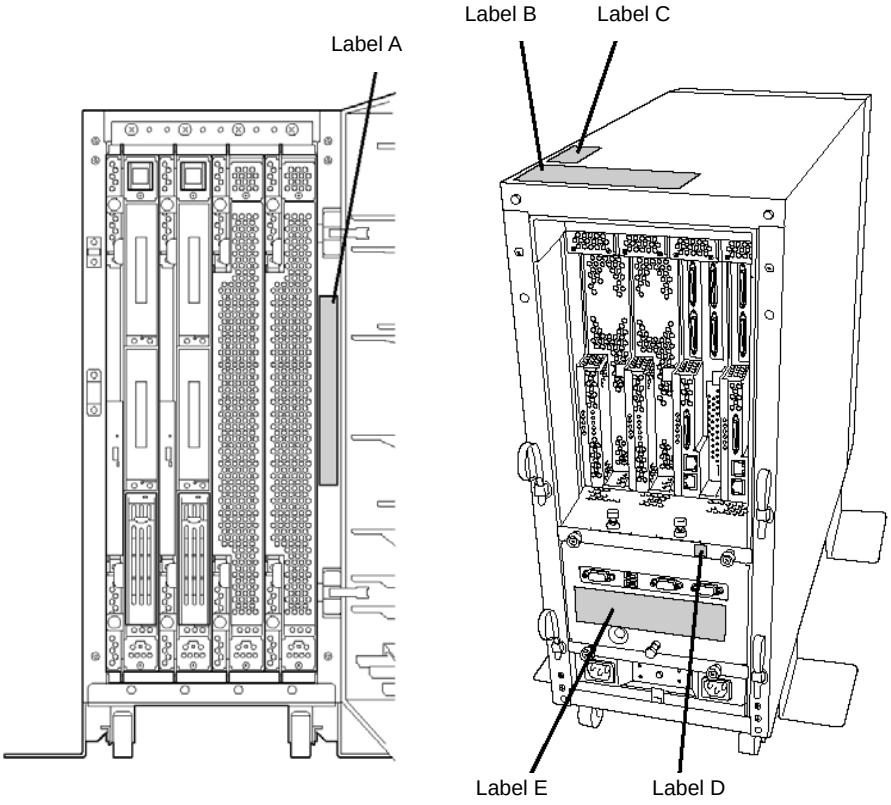
WARNING LABELS

Warning labels are placed in certain parts of the system so that the user stays alert to possible risks (Do not remove or damage these labels).

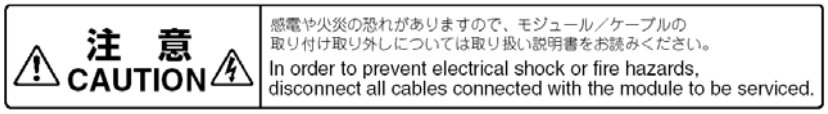
If some label is missing, about to peel off, or illegible, contact your sales agent.

Tower Model

The figures below show locations of the labels on the tower model server.



Label A


注 意
CAUTION
感電や火災の恐れがありますので、モジュール／ケーブルの
取り付け取り外しについては取り扱い説明書をお読みください。
In order to prevent electrical shock or fire hazards,
disconnect all cables connected with the module to be serviced.

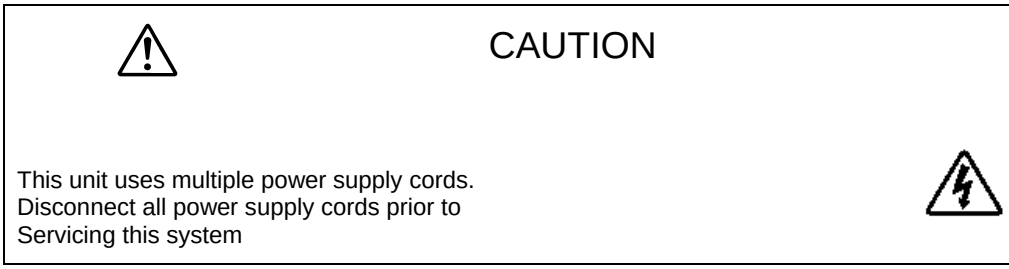
Label B

注 意 CAUTION
指を挟んだり、ぶつけたりしないように注意して下さい。
Exercise caution when handling the system to avoid personal injuries.
動作時及び電源を切った直後は、ハードディスクの表面が高温になっているので、取扱いには十分に注意してください。
As the hard disk drives may retain heat after powering down, allow ample time for cooling prior to handling.
CPUモジュールやPCIモジュール以外の保守時は、感電防止のために全てのコード及び外部接続ケーブルを抜いて下さい。
In order to prevent accidents such as electrical shock, disconnect all cables and external connections
when servicing non-hotswappable modules.
高温になるコンポーネントがあります。十分に冷えてから触れるようにして下さい。
As some components may become very hot during system operation, give ample time to allow cooling
as well as use precation when handling internal components immediately after powering down.
火災の原因になる可能性がありますので、ネジは本体内部へ落とさないよう十分ご注意下さい。
In order to prevent short circuits and fire hazards, exercise caution and avoid dropping screws inside the system.

Label C

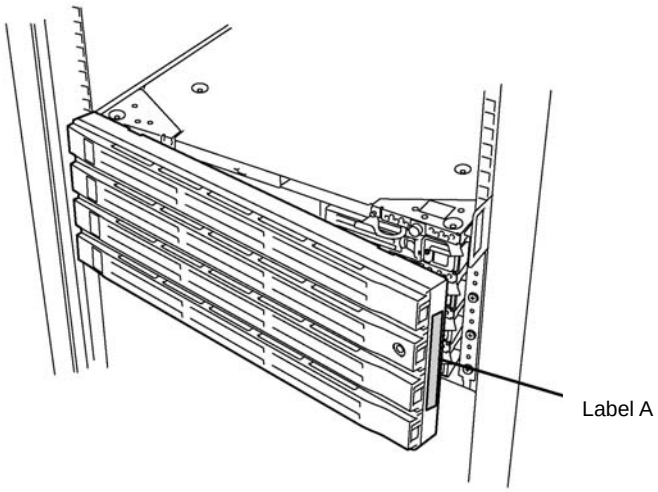
Label D

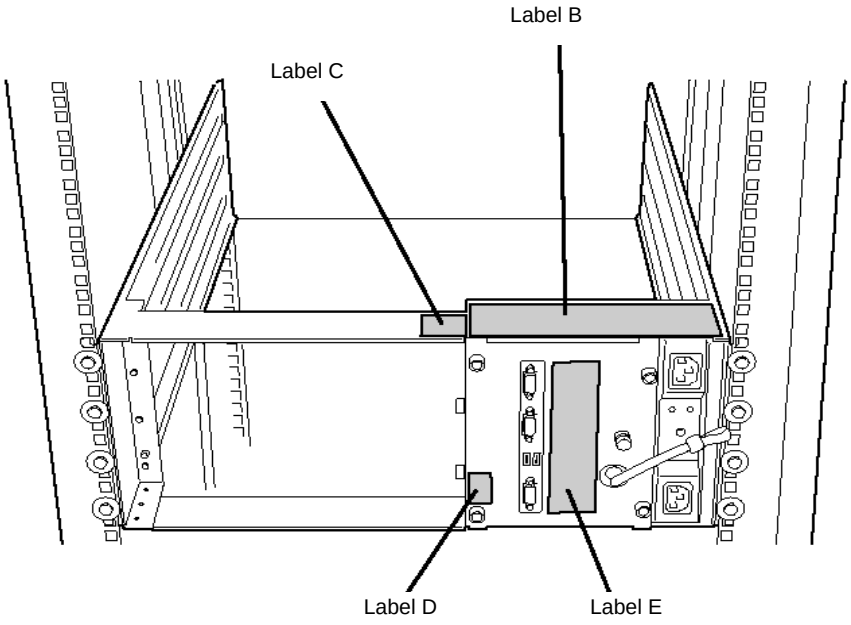
Label E



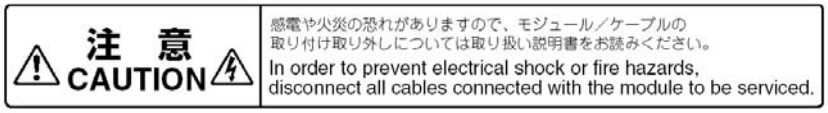
Rack-mount Model

The figures below show locations of the labels on the rack-mount model server.





Label A


注 意
CAUTION
感電や火災の恐れがありますので、モジュール／ケーブルの
取り付け取り外しについては取り扱い説明書をお読みください。
In order to prevent electrical shock or fire hazards,
disconnect all cables connected with the module to be serviced.

Label B

注 意 CAUTION
指を挟んだり、ぶつけたりしないように注意して下さい。
Exercise caution when handling the system to avoid personal injuries.
動作時及び電源を切った直後は、ハードディスクの表面が高温になっているので、取扱いには十分に注意してください。
As the hard disk drives may retain heat after powering down, allow ample time for cooling prior to handling.
CPUモジュールやPCIモジュール以外の保守時は、感電防止の為に全てのコード及び外部接続ケーブルを抜いて下さい。
In order to prevent accidents such as electrical shock, disconnect all cables and external connections
when servicing non-hotswappable modules.
高温になるコンポーネントがあります。十分に冷えてから触れるようにして下さい。
As some components may become very hot during system operation, give ample time to allow cooling
as well as use precation when handling internal components immediately after powering down.
火災の原因になる可能性がありますので、ネジは本体内部へ落とさないよう十分ご注意下さい。
In order to prevent short circuits and fire hazards, exercise caution and avoid dropping screws inside the system.

Label C

Label D

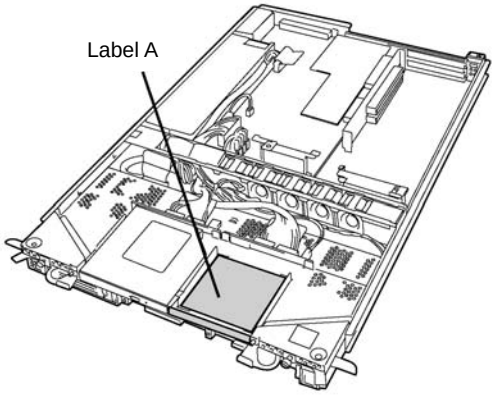
Label E

CAUTION

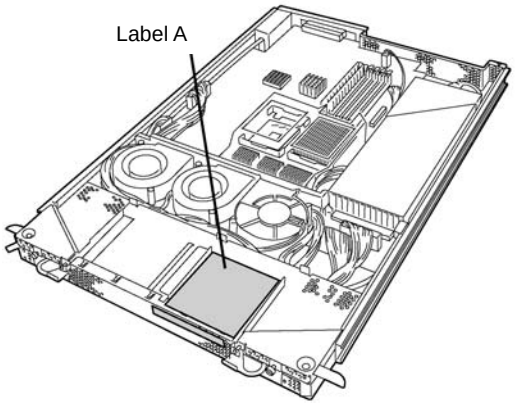
This unit uses multiple power supply cords.
Disconnect all power supply cords prior to
Servicing this system

PCI/CPU Modules

PCI Module



CPU Module



Label A

注 意 CAUTION
高温になるコンポーネントがあります。十分に冷えてから触れるようにしてください。
As some components may become very hot during system operation,
give ample time to allow cooling as well as use precaution
when handling internal components immediately after powering down.
電源を切ってもバッテリで稼働している部分があります。保守をする前に
各々のコンポーネントの取り扱い説明書をお読みください。
Some internal components may still be operational on battery power.
Refer to instruction for this system as well as options prior
to maintenance.

PRECAUTIONS FOR SAFETY

This section provides precautions for using the server safely. Read this section carefully to ensure proper and safe use of the server. For symbol meanings, see "SAFETY INDICATIONS" described in the previous section.

General

⚠ WARNING

Do not use the equipment in an operation where human lives are involved or high reliability is required.

This equipment is not intended for use in controlling or use with facilities or systems where human lives are involved or high reliability is required, including medical devices or nuclear, aerospace, transportation, and traffic control facilities. NEC assumes no liability for any accidents or damage to physical assets resulting from the use of this equipment in such systems or facilities.

Do not continue to use the equipment if you detect smoke, odor, or noise.

If the equipment emits smoke, odor, or noise, immediately flip off the POWER switch, unplug the cord, and contact your sales agent. There is a risk of a fire.

Do not insert a wire or metal object

Do not insert a wire or metal objects into a vent or disk drive slot. There is a risk of an electric shock.

Do not use the equipment in an unsuitable place.

Do not install a server rack in an unsuitable environment.
Other systems also may be affected, and the rack may fall over to cause a fire or injuries. For details about installation environment and quake-resistant engineering, see the attached manual or contact your sales agent.

Do not install the equipment on a nonconforming rack.

Install the equipment on a 19-inch rack confirming to the EIA standard. Do not use the equipment without a rack or install it on a nonconforming rack. The equipment may not function properly, and there is a risk of damage to physical assets or injuries. For suitable racks, contact your sales agent.

⚠ CAUTION

Prevent water or foreign objects from getting into the equipment.

Do not let water or foreign objects (e.g., pins or paper clips) enter the equipment. There is a risk of a fire, electric shock, and breakdown. When such things accidentally enter the equipment, immediately turn off the power and unplug the cord. Contact your sales agent instead of trying to disassemble it yourself.

Use of Power Supply and Power Cord

⚠ WARNING

Do not handle a power plug with a wet hand.

Do not plug/unplug a power cord with a wet hand. There is a risk of an electric shock.

Do not connect the ground wire to a gas pipe.

Never connect the ground wire to a gas pipe. There is a risk of a gas explosion.

⚠ CAUTION

Do not plug the cord in a nonconforming outlet.

Use a wall outlet with specified voltage and power type. There is a risk of a fire or current leakage.

Avoid installing the equipment where you may need an extension cord. If the cord that does not meet the power specifications, there is a risk of overheating that could lead to a fire.

Do not plug too many cords in a single outlet.

If the rated current is exceeded, there is a risk of overheating that could lead to a fire.

Do not plug the cord insecurely.

Insert the plug firmly into an outlet. There is a risk of heat or fire due to poor contact. If dust settles on the slots and it absorbs moisture, there is also a risk of heat or fire.

Do not use nonconforming power cords.

Use the power cords specified by NEC. If the rated current is exceeded, there is a risk of a fire.
You also have to observe the following prohibitions to prevent an electric shock and a fire caused by damages of the cords.

- Do not pull on the cord.
- Do not pinch the cord.
- Do not bend the cord.
- Keep chemicals away from the cord.
- Do not twist the cord.
- Do not place any object on the cord.
- Do not use cords as bundled.
- Do not alter, modify, or repair the cord.
- Do not staple the cord.
- Do not use any damaged cord. (Replace it with a new one of the same specifications. For replacement procedures, contact your sales agent.)

Installation, Relocation, Storage and Connection

⚠ WARNING

Disconnect the power cord(s) before installing or removing the equipment.

Be sure to power off the equipment and unplug its power cords from the wall outlet before installation/relocation. All voltage is removed only when the power cords are unplugged.

⚠ CAUTION

Do not hold the front bezel to lift the equipment.

The equipment weighs around 70 kg (depending on its hardware configuration). Do not hold the front bezel, or it may become detached, causing an injury. For lifting and moving the equipment, remove the mounted modules from the main unit and carry them separately. It takes at least two people to carry it; hold the equipment firmly by its bottom.

Do not install the equipment in an unsuitable place.

Install the equipment in such a place as specified in this User's Guide. Avoid the following, or there is a risk of a fire.

- a dusty place
- a humid place located near a boiler, etc
- a place exposed to direct sunlight
- an unstable place

Be careful not to hurt your fingers.

Exercise great care not to hurt your fingers on the rail when you mount/dismount the equipment into/from the rack.

Do not use or store this product in corrosive environment.

Avoid the usage or storage of this product in an environment which may be exposed to corrosive gases, such as those including but not limited to :
sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia and/or ozone.
Avoid installing this product in a dusty environment or one that may be exposed to corrosive materials such as sodium chloride and/or sulfur.
Avoid installing this product in an environment which may have excessive metal flakes or conductive particles in the air.
Such environments may cause corrosion or short circuits within this product, resulting in not only damage to this product, but may even lead to be a fire hazard.
If there are any concerns regarding the environment at the planned site of installation or storage, please contact your sales agent

⚠ CAUTION

Do not connect any interface cable with the power cord of the server plugged to a power source.

Make sure to power off the server and unplug the power cord from a power outlet before installing/removing any optional internal device or connecting/disconnecting any interface cable to/from the server. If the server is off-powered but its power cord is plugged to a power source, touching an internal device, cable, or connector may cause an electric shock or a fire resulted from a short circuit.

Do not use any non-designated interface cable.

Use only interface cables designated by NEC; identify which component or connector to attach beforehand. If you use a wrong cable or make a wrong connection, there is a risk of short-circuit that could lead to a fire.
You also have to observe the following prohibitions about handling and connecting interface cables:

- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the equipment with loose cable connections.

Cleaning and Handling of Internal Devices

⚠ WARNING

Do not disassemble, repair, or alter the server.

Unless described herein, never attempt to disassemble, repair, or alter the equipment. There is a risk of an electric shock or fire as well as malfunction.

Do not look into the CD-ROM drive

The CD-ROM drive uses a laser beam. Do not look or insert a mirror inside while the system is on. A laser beam is invisible; if your eyes get exposed to it, there is a risk of losing eyesight.

Do not detach a lithium battery yourself.

This equipment has a lithium battery. Do not detach it yourself. If the battery is exposed to fire or water, it could explode.

When the lithium battery is running down and the equipment doesn't work correctly, contact your sales agent instead of disassembling, replacing or recharging it yourself.

Disconnect the power plug before cleaning the server.

Make sure to power off the server and disconnect the power plug from a power outlet before cleaning or installing/removing internal optional devices. Touching any internal device of the server with its power cord connected to a power source may cause an electric shock even of the server is off-powered.

Disconnect the power plug from the outlet occasionally and clean the plug with a dry cloth. Heat will be generated if condensation is formed on a dusty plug, which may cause a fire.

⚠ CAUTION

High temperature

Immediately after powering off the system, system components such as hard disk may be very hot. Wait for the server to cool down completely before adding/removing components.

Make sure to complete installation.

Firmly install all power cords, interface cables and/or boards. An incompletely installed component may cause a contact failure, resulting in fire and/or smoke.

During Operation

⚠ CAUTION

Do not pull out a device during operation.

Do not pull out or remove a device while it works. There is a risk of malfunction and injuries.

Do not touch the equipment when it thunders.

Unplug the equipment when it threatens to thunder. If it starts to thunder before you unplug the equipment, do not touch the equipment and cables. There is a risk of a fire or electric shock.

Keep animals away.

Animal's waste or hair may get inside the equipment to cause a fire or electric shock.

Do not place any object on top of the server.

The object may fall off to cause injuries, damage to hardware and/or a fire.

Do not leave the CD tray ejected.

Dust may get in the equipment to cause malfunction. The ejected tray may also become a cause of injuries.

Do not use a cellular phone or pager around the equipment.

Turn off your cellular phone or pager when you use the equipment. Their radio waves may cause the equipment to malfunction.

Rack-mount Model

⚠ CAUTION

Do not attempt to install the server yourself.

To avoid a risk of injuries, users should not attempt to install the equipment into a rack. Installation should be performed by trained maintenance personnel.

< For Maintenance Personnel Only >

Do not remove and carry the equipment with modules mounted.

When you remove this product from the rack and carry it, remove all modules that are mounted first.

Do not install the equipment in such a manner that its weight is imposed on a single place.

To distribute the weight, attach stabilizers or install two or more racks. It may fall down to cause injuries.

Do not assemble parts alone.

It takes at least two people to mount doors and trays to a rack. You may drop some parts to cause a breakage or injuries.

Do not pull a device out of the rack if it is unstable.

Before pulling out a device, make sure that the rack is fixed (by stabilizers or quake-resistant engineering).

Do not leave two or more devices pulled out from the rack.

If you pull out two or more devices the rack may fall down. You can only pull out one device at a time.

Do not install excessive wiring.

To prevent burns, fires, and damage to the equipment, make sure that the rated load of the power branch circuit is not exceeded. For more information on installation and wiring of power-related facilities, contact your electrician or local power company.

For Proper Operation

Observe the following instructions for successful operation of the server. Failure to observe them could lead to malfunction or breakdown.

- Perform installation in a place where the system can operate correctly. For details, see the separate volume “User’s Guide (Setup)”.
- Before turning off the power or ejecting a disk, make sure that the access LED is off.
- When you have just turned off the power, wait at least 30 seconds before turning it on again.
- Once you have turned on the server, do not turn it off until the "NEC" logo appears on the screen.
- Before you move the equipment, turn off the power and unplug the cord.
- This server shall not assure reproduction of copy-protect CDs using reproduction equipment if such disks do not comply with CD standards.
- Clean the equipment regularly. (For procedures, see Chapter 6.) Regular cleaning is effective in preventing various types of trouble.
- Lightning may cause voltage sag. As a preventive measure, it is recommended to use UPS (uninterruptible power supply).

  This equipment does not support the connection through an UPS serial port (RS-232C) or the control using PowerChutePlus.

- Check and adjust the system clock before operation in the following conditions:

  - After transporting the equipment
  - After storing the equipment
  - After the equipment halt under the conditions which is out of the guranteed environment conditions (Temperature: 10 to 35°C, Humidity: 20 to 80%).

  Check the system clock once in a month. It is recommended to operate the system clock using a time server (NTP server) if it is installed on the system which requires high level of time accuracy. If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.

- When you store the equipment, keep it under storage environment conditions (Temperature: -10 to 55°C, Humidity: 20 to 80%, non-condensing).
- If NEC Express5800/ft series, the built-in optional devices, and the media set for the backup devices (tape cartridges) are moved from a cold place to a warm place in a short time, condensation will occur and cause malfunctions and breakdown when these are used in such state. In order to protect important stored data and assets, make sure to wait for a sufficient period of time to use the server or components in the operating environment.

  Reference: Length of the time effective at avoiding condensation in winter (more than 10°C differences between room temperature and atmospheric temperature)
  Disk devices: Approximately 2-3 hours
  Tape media: Approximately 1 day

- Make sure that the optional devices are attachable and connectable to the equipment. There is a risk of malfunctions that could lead to a breakdown of the equipment even if you could attach and connect.

- Make sure that your options are compatible with the system. If you attach any incompatible option, there is a risk of malfunction that could lead to a breakdown.
- It is recommended to use NEC's genuine option products. Some competitors' products are compatible with this server. However, servicing for trouble or damage resulting from such a product will be charged even within the warranty period.

TRANSFER TO THIRD PARTY

When you transfer (or sell) the product or its included items, you must observe the following:

Server

Attach this User's Guide to the server you are transferring (or selling) to a third party.

IMPORTANT: Data remaining on hard disk:

When you transfer your server, you are responsible for erasing important data stored on its hard disk (e.g., customer information, accounting information); you must be careful to prevent such data from leaking out to outsiders.

Even if you perform “Empty trash” on Windows or Linux operating system or execute a “format” command to erase data superficially, the data actually remains on the hard disk. If data is not erased completely, it could be restored by certain software and be used for unexpected purposes.

You are strongly recommended to buy a special type of software or service to avoid such trouble. For details, contact your sales agent.

NEC shall not be accountable for such data leakage caused by your failure to take necessary measures.

Included Software

When you transfer or sell the included software to a third party, you must meet the following conditions:

- Transfer all of the software included with the system. Do not retain any copies.
- Meet the conditions of transfer described in each software license agreement.
- Uninstall untransferable programs, if any, from the server before the transfer.

DISPOSAL OF EQUIPMENT AND CONSUMABLES

- When you dispose of the main unit, hard disk drive, floppy disks, CD-ROMs, optional boards, etc., you need to observe your local disposal rules. For details, ask your municipal office.

IMPORTANT: For disposal (or replacement) of batteries on the motherboard, consult with your sales agent.

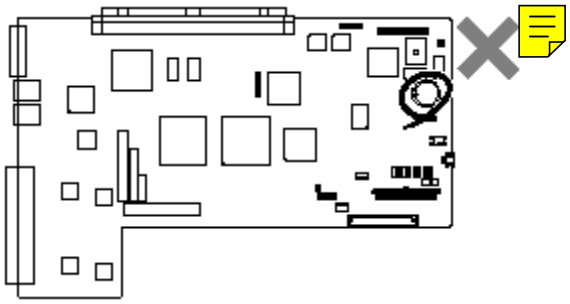
If data remains on the hard disk, backup data cartridges, floppy disks, or other writable media (such as CD-R and CD-RW), it could be restored and reused by outsiders. The customer is responsible for wiping out such data before disposal. You need to exercise sufficient care to protect privacy and confidential information.

- Some of the system components have limited lifetime (e.g., cooling fans, built-in batteries, built-in CD-ROM drive, floppy disk drive, mouse). For stable operation, it is recommended to replace them regularly. For lifetime of individual components and replacing procedures, ask your sales agent.

⚠ WARNING

Do not detach a lithium battery yourself.

This equipment has a lithium battery. Do not detach it yourself. If the battery is exposed to fire or water, it could explode.
RISK OF EXPLOSION IF BATTERY IS REPLACED WITH INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
When the lithium battery is running down and the equipment doesn't work correctly, contact your sales agent instead of disassembling, replacing or recharging it yourself.



PCI module board

IF SYSTEM TROUBLE IS SUSPECTED

Before sending the equipment for repair, try the following:

1. Check if its power cord and connection cables are attached correctly.
2. See “Error Messages” in Chapter 7 to check if there is a relevant symptom. If yes, take measures as instructed.
3. Certain software programs are required for operation of NEC Express5800/ft series. Check if these programs are properly installed.
4. Use a commercially available anti-virus program to check the server.

If the problem isn’t solved by the above actions, stop using the server and consult with your sales agent. In this case, check LED indications of the server and alarm indications on the display, which will serve as helpful information at the time of repair.

ABOUT REPAIR PARTS

The minimum duration of holding repair parts of this equipment may be different for each country, so contact the NEC sales representatives.
If the period is not specified, the repair parts are kept for 5 years after discontinuance of the product.

Advice for Your Health

Prolonged use of a computer may affect your health. Keep in mind the following to reduce stresses on your body:

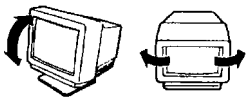
Sit in a good posture

Sit on your chair with your back straight. If the desk height is appropriate, you will slightly look down at the screen and your forearms will be parallel to the floor. This “good” work posture can minimize muscle tension caused by sedentary work.

If you sit in a “bad” posture—for example, sit round-shouldered or with you face too close to the display—you may easily suffer fatigue or have your eyesight affected.

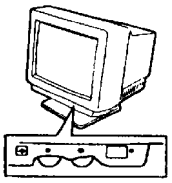
Adjust the installation angle of Display

Most types of displays allow you to adjust the angle vertically and horizontally. This adjustment is very important to prevent the reflection of light as well as to make the screen more comfortable to see. Without this adjustment, it is difficult to maintain a “good” work posture and may get tired soon. Be sure to adjust the angle before using the display.



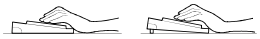
Adjust Brightness and Contrast

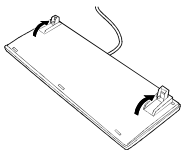
Displays allow you to adjust brightness and contrast. Optimum brightness and contrast vary depending on the individual, age, brightness of the room, etc; you need to make an adjustment accordingly. If the screen is too bright or too dark, it is bad for your eyes.



Adjust the installation angle of Keyboard

Some types of keyboards allow you to adjust the angle. If you adjust the angle to make the keyboard more comfortable to use, you can greatly reduce stresses on your shoulders, arms, and fingers.





Clean the Equipment

Cleanliness of the equipment is very important not only for reasons of appearance but also from the viewpoints of function and safety. Especially, you need to regularly clean the display, which gets unclear due to the accumulation of dirt.

Take a break when you get tired

If you feel tired, you are recommended to refresh yourself by taking a short break or doing a light exercise.

Chapter 2

General Description

This chapter describes what you need to know to use the NEC Express5800/ft series. Refer to this chapter when you want to know about certain components and how to operate them.

STANDARD FEATURES

High performance

- Intel® Xeon ™ Processor (2.8 GHz)
- High-speed Ethernet interface (1000Mbps/100Mbps/10Mbps supported)
- High-speed disk access (Ultra160 SCSI Wide)

Expandability

- Wide variety of optional I/O slots
  Four 64-bit/33 MHz, two 32-bit/33 MHz PCI slots
- Large memory of up to 6GB
- Remote power-on feature
- USB interface

High-reliability

- Memory monitoring feature (1-bit error correction/ 2-bit error detection)
- Bus parity error detection
- Temperature monitoring
- Error notification
- Built-in fan monitoring feature
- Internal voltage monitoring feature
- BIOS password feature
- Security feature (security lock for front bezel)

Management Utilities

- NEC ESMPRO
- NEC Management Workstation Application (NEC MWA)

Ready-to-use

- Quick cableless connection: hard disk, CPU module, and PCI module (hot-swap supported)

Fault-tolerant Feature

- Redundant modules achieved within a system
- Higher hardware availability by isolation of failed module

Various Features

- Graphic accelerator "CT69000" supported
- El Torito Bootable CD-ROM (no emulation mode) format supported
- POWER switch mask
- Remote power-on feature
- AC-LINK feature
- Consoleless feature

Self-diagnosis

- Power On Self-Test (POST)
- Test and Diagnosis (T&D) Utility

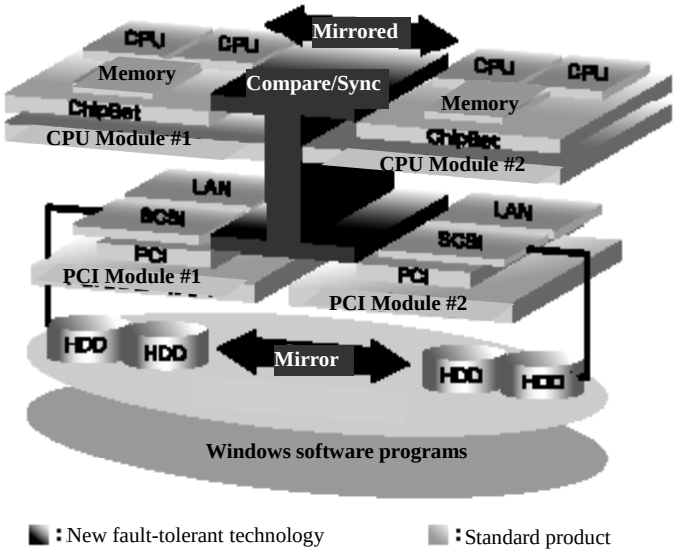
Maintainability

- Off-line Maintenance Utility

Easy and Fine Setup

- NEC EXPRESSBUILDER (system setup utility)
- SETUP (BIOS setup utility)
- *Fast!*UTIL (SCSI device utility)

The NEC Express5800/ft series achieves fault-tolerant high-availability in a space-saving form factor by incorporating redundant hardware module pairs in a single chassis. These modules work in synchronous tight lockstep while constantly making comparisons with each other and detecting anomalous diversions in operation.



Even if one hardware module stops, the server can continue operation with the other module. After the failed module is replaced, the new module will obtain information from the other and resume operation.

NEC Express5800/ft series is a highly fault-tolerant Windows server that achieves continuous computing operations, data storage mirror, and continuous network connection. It allows you to run Windows Server 2003-based applications.

NEC Express5800/ft series achieves continuous computing operations for the Windows server and server-based applications with its redundant CPU processing and redundant memory. It assures data redundancy through duplication of server data on an independent storage system. These features eliminate server downtime that is usually caused by network disconnection or trouble with the I/O controller, Ethernet adapter or disk drive, and support operation of the network and server applications continuously. While being transparent to application software, NEC Express5800/ft series achieves high fault-tolerance.

NEC Express5800/ft series detects status changes, errors and other events and notifies the Windows Event Log of these events. If you use an alarm notification tool, you can configure NEC Express5800/ft series to notify you when certain events occur.

NEC ESMPRO is installed on the system as a server management solution. NEC ESMPRO, a GUI-based management tool, allows you to monitor, view, and configure NEC Express5800/ft series. This tool also supports both local and remote management of NEC Express5800/ft series.

NEC Express5800/ft series mainly provides the following advantages:

- Highly fault-tolerant processing and I/O subsystems

  NEC Express5800/ft series use redundant hardware and software to assure server operation even if one module suffers trouble with its processor, memory, I/O (including trouble related to the I/O controller), disk drive, or Ethernet adapter.

- Continuous network connection

  NEC Express5800/ft series maintains continuous network connection by detecting any trouble with the network adapter, connection, etc. If trouble occurs, the standby network connection will take over all network traffic processing and thus securely maintain the network system connection of NEC Express5800/ft series without losing network traffic or client connection.

- Support of multiple network connections

  Since NEC Express5800/ft series can support multiple Ethernet connections, you can add network redundant control or network traffic control.

- Industry standard hardware platform

  NEC Express5800/ft series uses IA (Intel Architecture)-based system hardware.

- No need to modify applications

  You can run Windows Server 2003-compliant applications on NEC Express5800/ft series. Thus, unlike other highly fault-tolerant products, special API or scripts are not necessary.

- Automatic mirroring

  NEC Express5800/ft series automatically maintains data as the current data.

- Automatic detection and notification of faults

  NEC Express5800/ft series detects and sorts out all events such as general status changes and faults, and notifies Windows Event Log of these events.

- Transparent migration

  NEC Express5800/ft series constantly monitors events. If trouble occurs on NEC Express5800/ft series' server module, it will transparently use a redundant module of the failed module. This feature maintains data and user access without losing application service.

- Automatic reconfiguration

  When the failed module restarts after the trouble is corrected, NEC Express5800/ft series will perform reconfiguration automatically, and if necessary, resynchronize the affected modules. Reconfiguration can include CPU processing (e.g., CPU memory), server's operating system (and related applications), and system data stored on the hard disks. In most cases, NEC Express5800/ft series automatically restores redundancy of the server modules after recovery.

- Local and remote management

  NEC Express5800/ft series uses NEC ESMPRO as a server management tool. This tool uses a GUI that enables monitoring and setting of NEC Express5800/ft series. NEC ESMPRO can be used both locally and remotely on work station PCs or server PCs.

- Event notification function

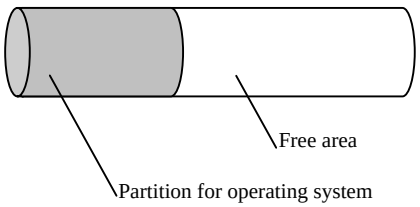
  When trouble or other events are detected on NEC Express5800/ft series, they will be notified to Windows Event Log and saved. Therefore, you can view the log items locally or remotely by a usual Windows procedure. Since an NEC Express5800/ft series events use unique IDs, they are easy to distinguish.

- In-service repairing

  You can repair or replace a failed module even if NEC Express5800/ft series is operating.

- Partition structure

  On this product, the first logical drive will be in the following state when the setup by NEC EXPRESSBUILDER is complete:



  * The size varies depending on the specification at setup.

CHECK: The partition for operating system is not mirrored at the time of NEC EXPRESSBUILDER setup completion. Mirror the partition separately.

- Windows OS and media

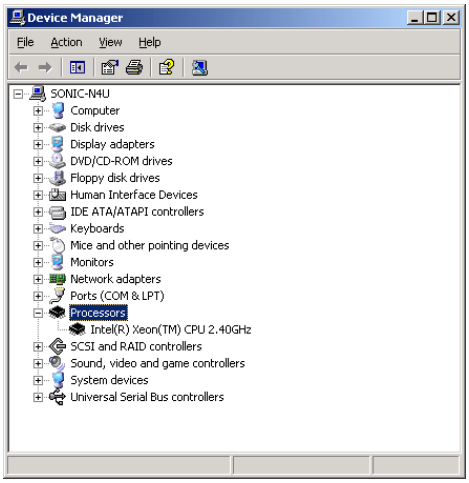
  The Windows OS media used on NEC Express5800/ft series are not specifically processed for it. The standard operating methods of Windows are same as general.

HOW THE OPERATING SYSTEM SEES THE CPU MODULES

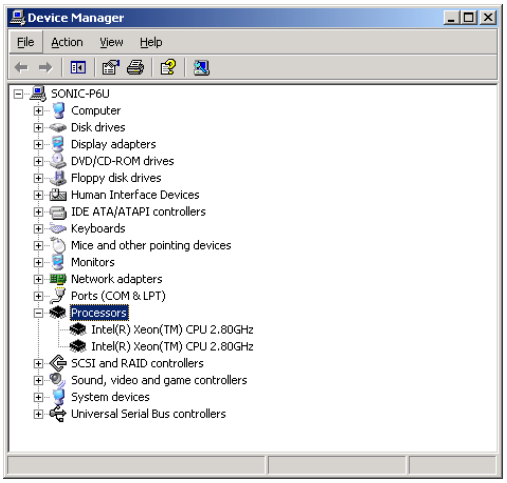
On NEC Express5800/ft series, the CPU modules are redundantly configured but only the processors installed on the **primary** side are shown.

How CPU modules appear on Device Manager

Device Manager shows as many CPUs as the number of physical CPUs.



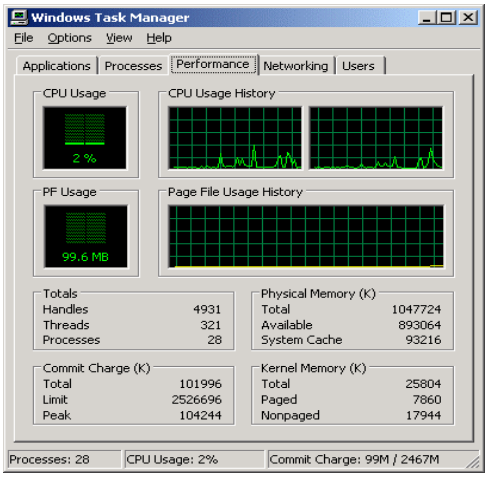
System with one CPU



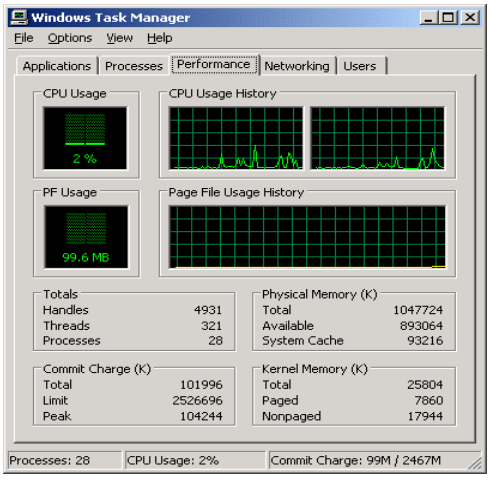
System with two CPUs

How CPU modules appear on Task Manager

Intel Xeon processor introduces a new technology called Hyper-Threading Technology. It is a technology that makes the operating system see a single processor performing as two logical processors.
Task Manager shows logical processors using the Hyper-Threading Technology. As shown below, information for the processors of twice the number of physical processors is displayed.



System with one CPU

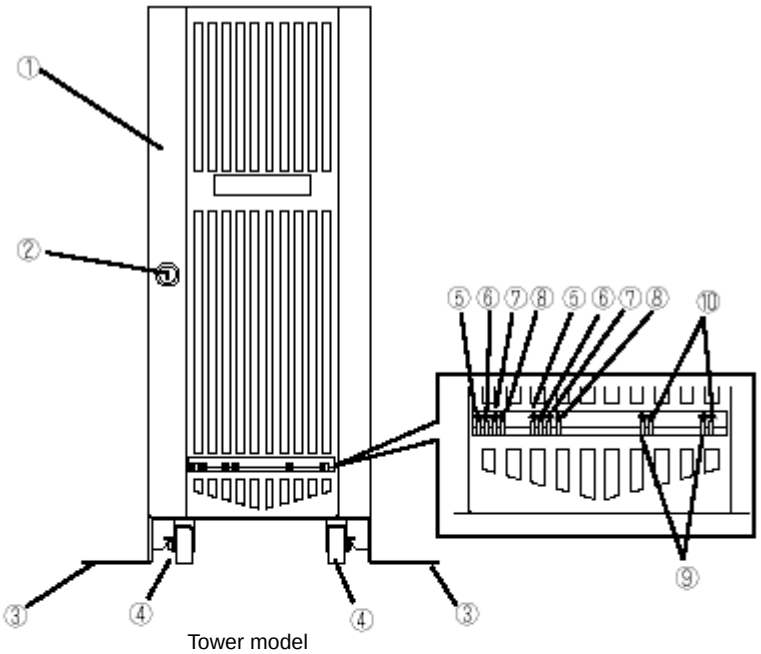


System with two CPUs

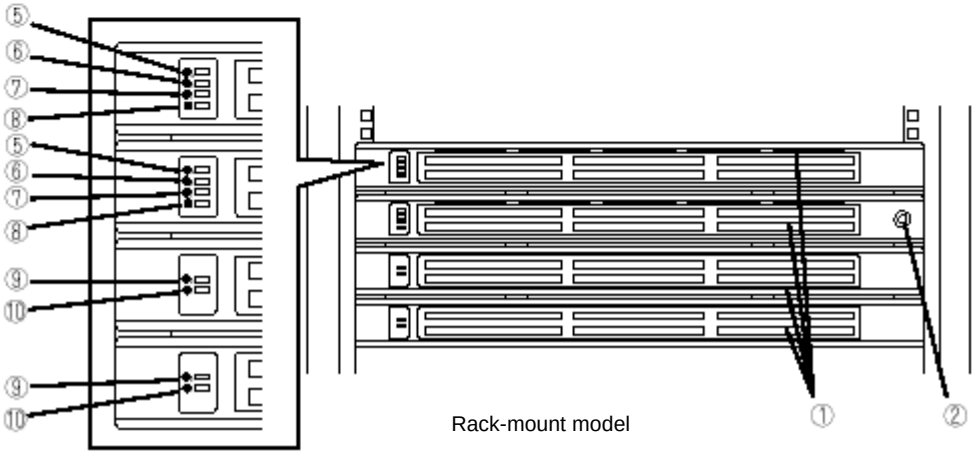
NAMES AND FUNCTIONS OF COMPONENTS

Names and functions of components are shown below:

Front View



Tower model



Rack-mount model

1 **Front bezel**
A door that covers internal components. You can lock it with the included security key.

2 **Key slot**
Insert the security key in this slot to unlock the front bezel.

3 **Stabilizers**
Parts for stabilizing a tower-model unit.

4 **Casters**
Wheels for moving a tower-model unit.

5 **BMC status LED**
See “LEDs” in this chapter for details.

6 **PCI module status LED 1**
See “LEDs” in this chapter for details.

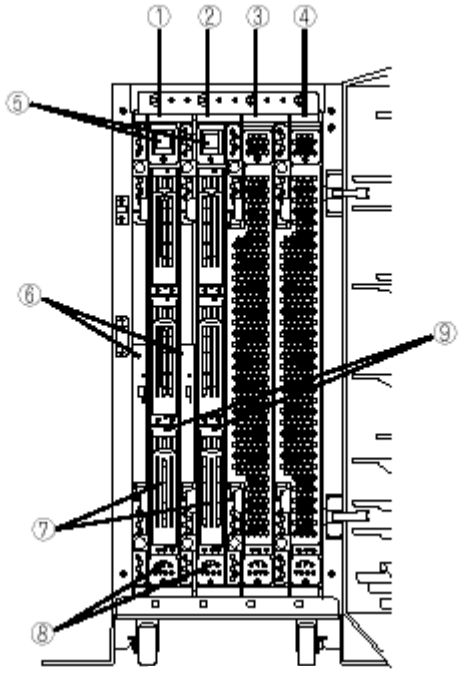
7 **PCI module status LED 2**
See “LEDs” in this chapter for details.

8 **DISK ACCESS LED**
See “LEDs” in this chapter for details.

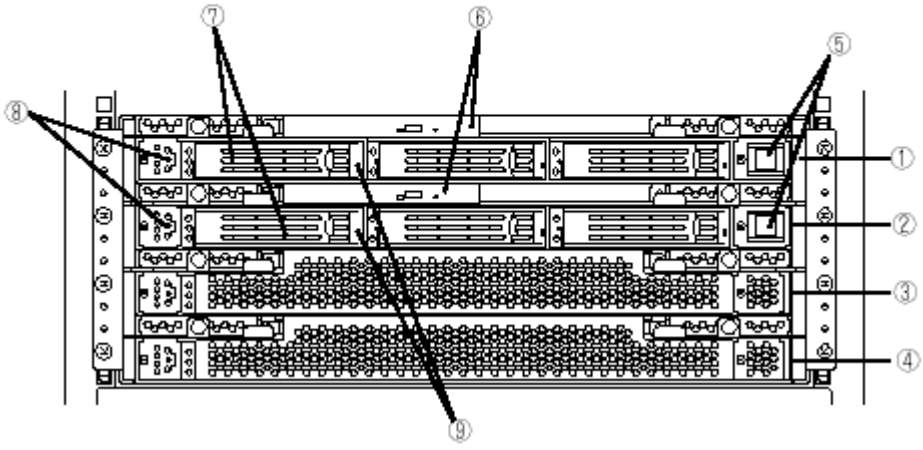
9 **CPU module status LED 1**
See “LEDs” in this chapter for details.

10 **CPU module status LED 2**
See “LEDs” in this chapter for details.

Front View (inside)



Tower model



Rack-mount model

1 PCI module (for group 1)
A module that includes a PCI board and LAN controller.

2 PCI module (for group 2)
A module that includes a PCI board and LAN controller.

3 CPU module (for group 1)
A module that includes a CPU (processor) and memory (DIMM).

4 CPU module (for group 2)
A module that includes a CPU (processor) and memory (DIMM).

5 POWER switch
A switch for turning on/off power to the system. The POWER switch on the primary PCI module will be lit. Press it once to turn on power. Press it again to turn off power. Depress the switch for more than four seconds to force the system to power down. The POWER switch on the secondary PCI module will be unlit and will not respond until a failure in the primary PCI module causes the secondary PCI module to assume primary functionality.

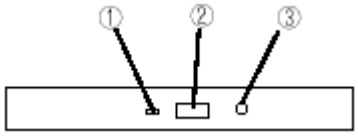
6 CD-ROM drive
Used for reading data from CD-ROMs.
Although there are two CD-ROM drives, only the one on the active primary PCI module can be used (the module with the lit POWER Switch LED).

7 3.5-inch hard disk drive bay
Slots for adding hard disks. On a tower model, they are called Slots 1, 2, and 3 from the bottom. On a rack-mount model, they are called Slots 1, 2, and 3 from the left. Slots of the same number are mirrored between the groups 1 and 2.

8 DUMP switch
A switch for outputting a memory image from the kernel to a file.

9 DISK LED (green/amber)
An LED on the hard disk. Blinks in green while the hard disk is accessed and turns amber when operating in simplex mode. If one of the mirrored hard disks fails, the failed disk's LED turns green and the other disk's LED turns amber.

CD-ROM Drive

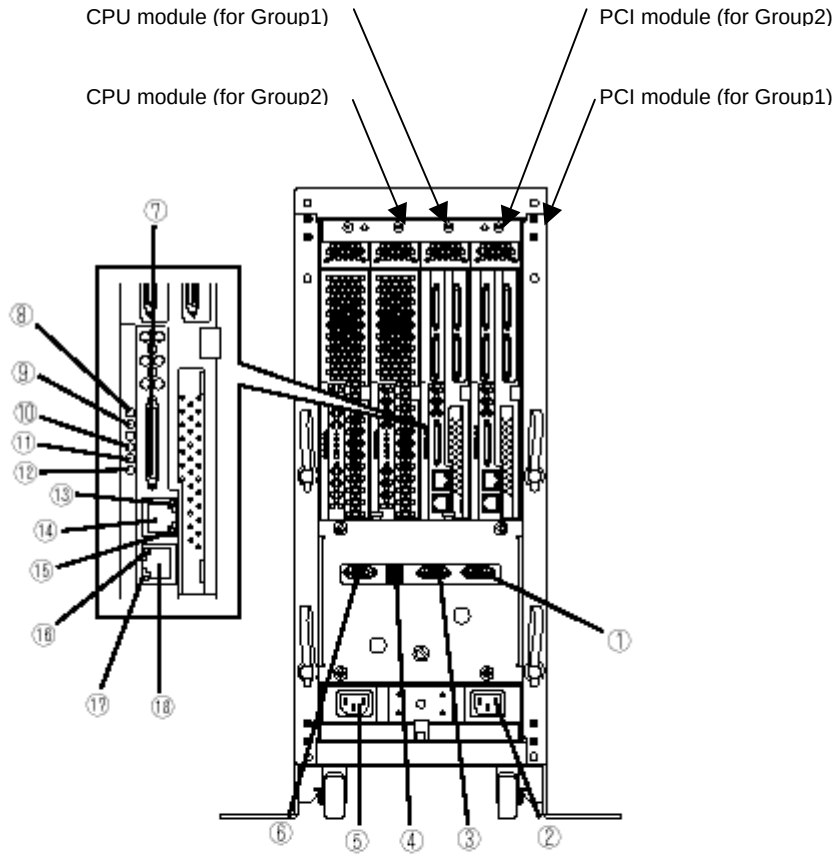


1 Status LED
An LED that stays on while the loaded CD-ROM is accessed.

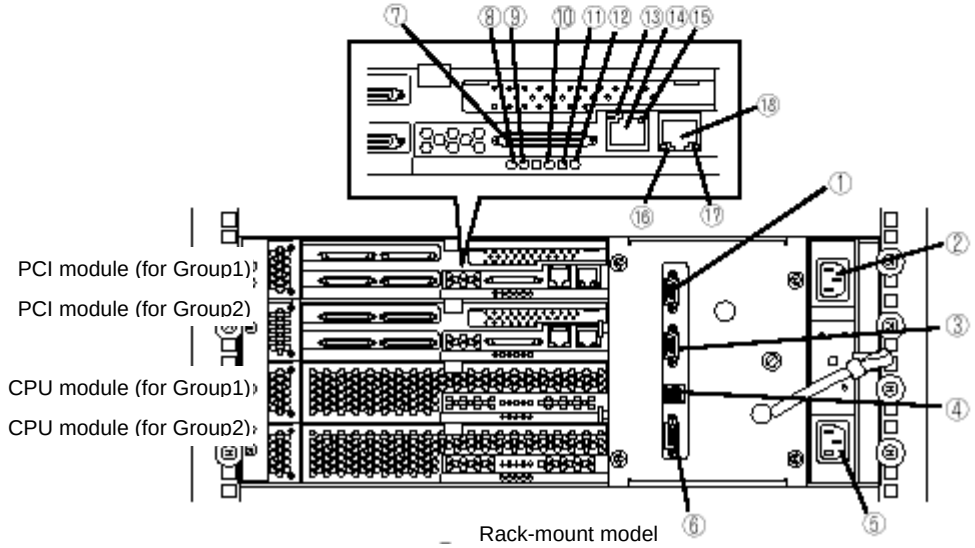
2 CD tray eject button
A button for ejecting the CD tray.

3 Manual release hole
When the eject button does not work, insert a metal pin into this hole to forcefully eject the CD tray.

Rear View



Tower model



Rack-mount model

1 **Serial port A connector**
Connected to a device that has a serial interface. For maintenance use only.

2 **AC inlet B (for Group1)**
PC socket for plugging a power cord (for Group1). If you desire to make the PCI module for Group1 primary, use this inlet to connect the power cord first.

3 **Serial port B connector**
Connected to a device that has a serial interface. For maintenance use only.

4 **USB connectors**
Tower model: from top: USB1, USB2
Rack-mount model: from left: USB1, USB2
Connected to devices that support the USB interface.
Connect the keyboard (with mouse) to USB 1; connect the USB floppy disk drive to USB 2.

5 **AC inlet A (for Group2)**
PC socket for plugging a power cord (for Group2). If you desire to make the PCI module for Group2 primary, use this inlet to connect the power cord first.

6 **Monitor connector**
Connected to the display unit.

7 **SCSI connector**
Used for connecting external SCSI devices.

8 **PCI module status LED 1**
See “LEDs” in this chapter for details.

9 **PCI module status LED 2**
See “LEDs” in this chapter for details.

10 **PCI board slot status LED (Slot1)**
See “LEDs” in this chapter for details.

11 **PCI board slot status LED (Slot2)**
See “LEDs” in this chapter for details.

12 **PCI board slot status LED (Slot3)**
See “LEDs” in this chapter for details.

13 **LINK/ACT LED**
See “LEDs” in this chapter for details.

14 **LAN connector 1**
A connector for 1000BASE-T, 100BASE-TX, and 10BASE-T. Connected to the network system on LAN.

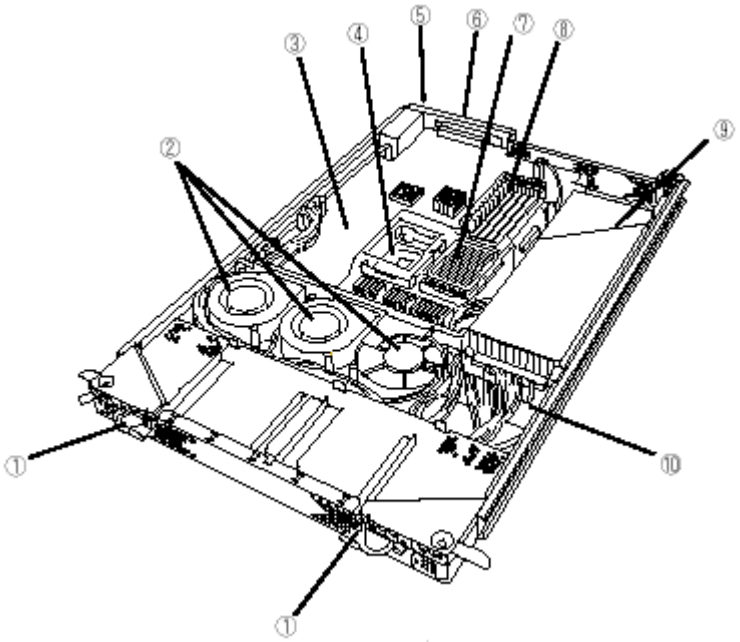
15 **1000/100/10 LED**
See “LEDs” in this chapter for details.

16 **LINK/ACT LED**
See “LEDs” in this chapter for details.

17 **100/10 LED**
See “LEDs” in this chapter for details.

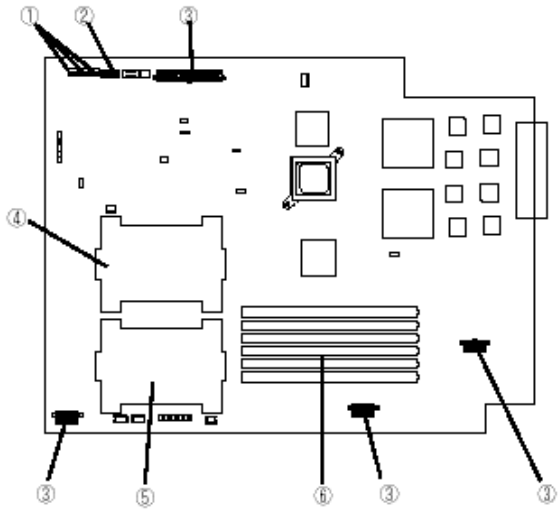
18 **LAN connector 2**
A connector for 100BASE-TX and 10BASE-T. Connected to the network system on LAN.

CPU Module



Group 1 and group 2 have the same configuration.

1	Module handle
2	Cooling fan
3	CPU module board
4	CPU socket #2 (additional)
5	AC inlet (in the back)
6	Back panel connector (in the back)
7	CPU socket #1 (standard)
8	DIMM
9	Power unit
10	Power backboard



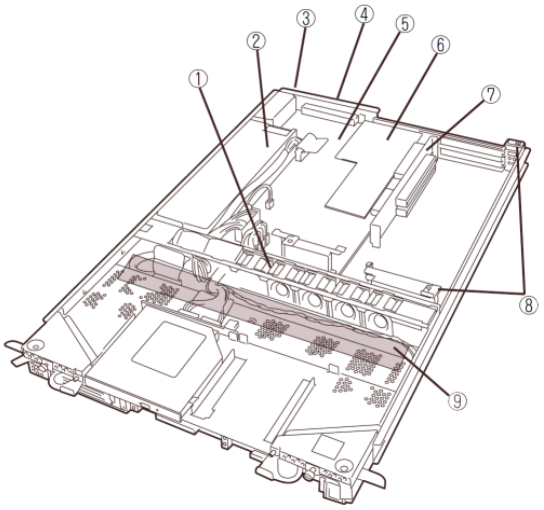
CPU module board

Group 1 and group 2 have the same configuration.

1 Cooling fan connector
2 LED connector
3 Power connector
4 CPU socket #2
5 CPU socket #1
6 DIMM sockets (Slots #1 to #6 from left. Add memory modules in pairs: #1 and #2, #3 and #4, #5 and #6.)

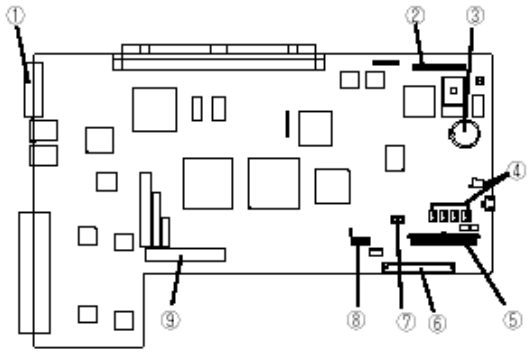
*This section only describes connectors that are used for replacing parts or upgrading. Other connectors have been setup before shipment.

PCI Module



Group 1 and group 2 have the same configuration.

1 Cooling fan
2 Power unit
3 AC inlet (in the back)
The AC cable in the module which is connected to the AC inlet cannot be used for other purposes.
4 Backpanel connector (in the back)
5 PCI module board
6 Video board
7 PCI riser card
8 PCI board retention bracket
9 SCSI backboard

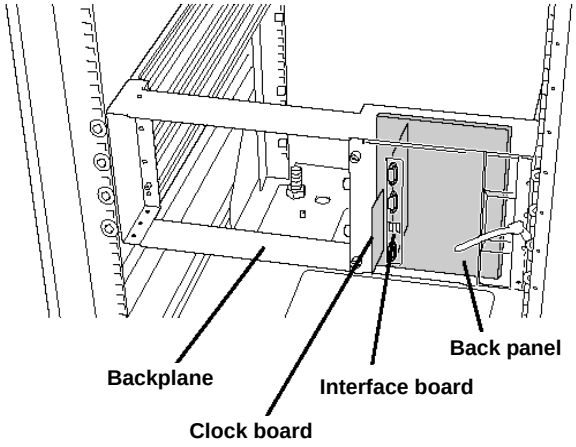


PCI module board
Group 1 and group 2 have the same configuration.

1 SCSI connector (external)
2 Configuration jumper pin
3 Battery (lithium battery)
4 Cooling fan connector
5 Power connector
6 IDE connector
7 Power switch connector
8 LED connector
9 SCSI connector (internal)

Chassis Board Layout

Rack-mount model



LEDs

This section describes indications and meanings of the LEDs on NEC Express5800/ft series.

Refer to pages 2-6 through 2-12 for the locations of each LED.

POWER LED

The POWER switch of the PCI module also functions as a POWER LED. When power is supplied to the modules, POWER LED on the primary side will illuminate (the switch also works on the primary side alone).

BMC Status LED

The BMC status LED indicates the status of the Baseboard Management Controller (BMC) installed on NEC Express5800/ft series.

The LED stays green while the server is running normally. If the LED is not green, there is something wrong with the server.

The table below shows indications of the BMC status LED and their meanings.

TIPS:

- If the server has the NEC ESMPRO or Off-line Maintenance Utility installed, you can view the error log to identify the cause of a trouble.
- When you want to restart the server, perform a shutdown if the OS allows you to shut down the system. If not, perform a reset or forced shutdown, or you can restart the server by unplug and plugging the power cord.

LED indications		Description	Action
Primary	Secondary		
Green	Off	BMC operates normally and CPU and PCI modules are in duplex mode.	–
Green (blinking every 1 second)	Off	CPU or PCI modules are not in duplex mode during operation.	Remount components whose status LED is red. If the problem persists, replace that module.
Off	Off	AC power is all off.	Turn on the AC power.
		Performing POST.	Wait for a while; it will illuminate in green shortly after POST.
		CPU module error occurred.	After turning off the power, turn it on to restart the system. If some error message appears on the POST screen, write it down and contact your sales agent.
		PCI module error occurred.	

LED indications		Description	Action
Primary	**Secondary**		
Amber	Off	Detected a fatal temperature error.	If LCD displays some error message, refer to the error message list (see Chapter 7). Check if dust is accumulated on internal fans and confirm that the fan cables are connected firmly. If the message does not disappear, contact your sales agent.
		Detected a fatal voltage error.	Contact your sales agent.
Amber (blinking every 1 second)	Off	Detected a temperature error to be warned.	If LCD displays some error message, refer to the error message list (see Chapter 7). Check if dust is accumulated on internal fans and confirm that the fan cables are connected firmly. If the message does not disappear, contact your sales agent.
		Detected a voltage error to be warned.	Contact your sales agent.
		Detected a device defect.	
		Detected a fan alarm.	If LCD displays some error message, refer to the error message list (see Chapter 7). Check if dust is accumulated on internal fans, and confirm that the fan cables are connected firmly. If the message does not disappear, contact your sales agent.
Red	Off	BMC is being dumped.	Wait for a while; it will go off soon.
		PCI module may be connected incorrectly.	Check if PCI module is connected correctly. Look for loose screws.
		BMC may be out of order.	BMC firmware may need reprogramming. Contact your sales agent.
ANY*[1]	Red	BMC is being dumped.	Wait for a while. After a while, the BMC status LED on the secondary will blink.
		PCI module may be connected incorrectly.	Check if PCI module is connected correctly. Look for loose screws.
		BMC may be out of order.	BMC firmware may need to be rewritten. Contact your sales agent.
ANY*[1]	Red (blinking every 0.5 second)	Transfers data being synchronized after a PCI module is replaced (this is not an error).	Do not remove either of the PCI modules or control the AC/DC power until the LED stops blinking.
ANY*[1]	Red (blinking every 1 second)	The revision of BMC firmware does not match.	Contact your sales agent.

LED indications		Description	Action
Primary	Secondary		
Red	Red	BMC is being dumped.	Wait for a while. After a while, the BMC status LED on the primary will go off.
		Both BMCs are out of order.	Check if both PCI modules are connected correctly. Confirm that screws are fixed firmly. If the indication does not change, contact your sales agent.

*1 The status of green, green (blinking every second), amber, amber (blinking every second), or off.

PCI Module Status LEDs 1/2 (◁1/◁2)

Disk Access LED

The PCI module has three LEDs.
Combined, the three LEDs show the status of the PCI modules and hard disks.

See “NAMES AND FUNCTIONS OF COMPONENTS” (page 2-7) for the locations of LEDs.

(1) Status LED 1 of both PCI modules are off

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Green	Green/ Off *	Green	Green/ Off *	Both PCI modules operate normally in duplex mode.	-
Green	Off	Amber	Amber	Some trouble occurred on a hard disk of the PCI module 1.	Reconfigure the hard disk mirror. (See “DISK OPERATIONS” in Chapter 3, Windows Setup and Operation) If the problem persists, contact your sales agent.
Amber	Amber	Green	Off	Some trouble occurred on a hard disk of the PCI module 2.	
Off	Off	Amber	Amber	AC power is not supplied to the PCI module 1. The PCI module 2 operates in simplex mode.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit of the PCI module 1 is connected correctly. Remount the PCI module 1. If the problem persists, contact your sales agent.
Amber	Amber	Off	Off	AC power is not supplied to the PCI module 2. The PCI module 1 operates in simplex mode.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit of the PCI module 2 is connected correctly. Remount the PCI module 2. If the problem persists, contact your sales agent.

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Green	Green/ Off *	Amber	Green/ Off *	i) There is an error in the option PCI board or the PCI module board connected or mounted on PCI module 1. ii) There is an error in the devices connected to the option PCI board connected or mounted on PCI module 1. (including the cable disconnection) iii) The LAN cable connected or mounted on PCI module 1 is disconnected.	Make sure that the option PCI board is properly mounted and cables are properly connected to the connecters of the PCI module or the option PCI board. Remount the PCI module 1. If the problem persists, contact your sales agent.
Amber	Green/ Off *	Green	Green/ Off *	i) There is an error in the option PCI board or the PCI module board connected or mounted on PCI module 2. ii) There is an error in the devices connected to the option PCI board connected or mounted on PCI module 2 (including the cable disconnection) iii) The LAN cable connected or mounted on PCI module 2 is disconnected.	Make sure that the option PCI board is properly mounted and cables are properly connected to the connecters of the PCI module or the option PCI board. Remount the PCI module 2. If the problem persists, contact your sales agent.
Amber	Amber	Amber	Amber	DISKs are performing mirroring (when mirroring by Disk Management).	Wait for the mirroring to be completed.
Amber	Amber	Green	Green/ Off *	DISKs are performing mirroring. (when mirroring by the RDR function)	Wait for the mirroring to be completed.
Green	Green/ Off *	Amber	Amber		

* DISK ACCESS LED illuminates green when hard disk is accessed.

Tips: When the status LED 1 is off, the colors of the status LED 2 indicate the following. You must be careful especially when detaching modules.
- Green: Unmounting the module has no effect on the system operation.
- Amber: Unmounting the module causes a system down.

(2) Status LED 1 of both PCI modules are red

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Off	Off	Off	Off	On standby (AC power is supplied through the cord, but the system has not been powered on yet.)	After turning on the power, wait for the OS to start. When the OS starts and duplex mode is established, the indications will return to normal. If they do not get back to normal, remount the CPU module. If the problem persists, contact your sales agent.
Green	Off	Off	Off	The PCI module 1 is performing diagnosis (Diag).	Wait for the OS to start. When the OS starts and duplex mode is established, the indications will return to normal.
Off	Off	Green	Off	The PCI module 2 is performing diagnosis (Diag).	Wait for the OS to start. When the OS starts and duplex mode is established, the indications will return to normal.

(3) Status LED of only PCI module 1 is red

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Off	Off	Amber	Amber	The PCI module 1 is on standby (The PCI module 1 has not been powered on yet.) The PCI module 2 operates in simplex mode.	Start the PCI module 1 from ft server utility (See pages 3-39 through 3-41). Remount the PCI module 1. If the problem persists, contact your sales agent.
Green	Off	Amber	Amber	The PCI module 1 is performing diagnosis (Diag). The PCI module 2 operates in simplex mode.	Wait for the PCI module 1 to start. When the PCI module 1 starts and duplex mode is established, the indications will return to normal.
Off	Off	Off	Off	Only the PCI module 1 is on standby (AC power is supplied through the cord, but the system has not been powered on yet.) AC power is not supplied to the PCI module 2.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit is connected correctly. Remount the PCI module 2. If the problem persists, contact your sales agent.

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Green	Off	Off	Off	The PCI module 1 is performing diagnosis (Diag). AC power is not supplied to the PCI module 2.	Wait for the OS to start. After the OS starts, check the status LEDs and then take the appropriate actions. If the problem persists, contact your sales agent.

(4) Status LED of only PCI module 2 is red

PCI#1		PCI#2		Description	Action
Status LED 2	**DISK Access LED**	**Status LED 2**	**DISK Access LED**		
Amber	Amber	Off	Off	The PCI module 2 is on standby (The PCI module 2 has not been powered on yet.) The PCI module 1 operates in simplex mode.	Start the PCI module 2 from ft server utility (See pages 3-39 through 3-41). Remount the PCI module 2. If the problem persists, contact your sales agent.
Amber	Amber	Green	Off	The PCI module 2 is performing diagnosis (Diag). The PCI module 1 operates in simplex mode.	Wait for the PCI module 2 to start. When the PCI module 2 starts and duplex mode is established, the indications will return to normal.
Off	Off	Off	Off	Only the PCI module 2 is on standby (AC power is supplied through the cord, but the system has not been powered on yet.) AC power is not supplied to the PCI module 1.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit is connected correctly. Remount the PCI module 1. If the problem persists, contact your sales agent.
Off	Off	Green	Off	The PCI module 2 is performing diagnosis (Diag). AC power is not supplied to the PCI module 1.	Wait for the OS to start. After the OS starts, check the status LEDs and then take the appropriate actions. If the problem persists, contact your sales agent.

CPU Module Status LEDs 1/2 (◁1/◁2)

The CPU module has two LEDs.
Combined, the two LEDs show the status of CPU modules:

See “NAMES AND FUNCTIONS OF COMPONENTS” (page 2-7) for the locations of LEDs.

CPU#1		CPU#2		Description	Action
Status LED1	Status LED2	Status LED1	Status LED2		
Off	Green	Off	Green	The CPU module operates normally in duplex mode.	-
Off	Amber	Red	Off	The CPU module 2 is on standby (The CPU module 2 has not been powered on yet.) The CPU module 1 operates in simplex mode.	Start the CPU module 2 from ft server utility (See pages 3-42 through 3-43). Remount the CPU module 2. If the problem persists, contact your sales agent.
Red	Off	Off	Amber	The CPU module 1 is on standby (The CPU module 1 has not been powered on yet.) The CPU module 2 operates in simplex mode.	Start the CPU module 1 from ft server utility. (See pages 3-42 through 3-43.) Remount the CPU module 1. If the problem persists, contact your sales agent.
Off	Amber	Red	Green	The CPU module 2 is performing diagnosis (Diag). The CPU module 1 operates in simplex mode.	Wait for the CPU module 2 to start. When the CPU module 2 starts and duplex mode is established, the indications will return to normal.
Red	Green	Off	Amber	The CPU module 1 is performing diagnosis (Diag). The CPU module 2 operates in simplex mode.	Wait for the CPU module 1 to start. When the CPU module 1 starts and duplex mode is established, the indications will return to normal.
Off	Off	Off	Amber	AC power is not supplied to the CPU module 1. The CPU module 2 operates in simplex mode.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit is connected correctly. Remount the CPU module 1. If the problem persists, contact your sales agent.

CPU#1		CPU#2		Description	Action
Status LED1	**Status LED2**	**Status LED1**	**Status LED2**		
Off	Amber	Off	Off	AC power is not supplied to the CPU module 2. The CPU module 1 operates in simplex mode.	Check if the power cord is connected correctly. Check the condition of breaker and UPS. Check if the power unit is connected correctly. Remount the CPU module 2. If the problem persists, contact your sales agent.
Off	Off	Red	Green	AC power is not supplied to the CPU module 1. The CPU module 2 is performing diagnosis (Diag).	Wait for the OS to start. After the OS starts, check the status LEDs and then take the appropriate actions. If the problem persists, contact your sales agent.
Red	Green	Off	Off	AC power is not supplied to the CPU module 2. The CPU module 1 is performing diagnosis (Diag).	
Red	Off	Red	Off	On standby (AC power is supplied through the cord, but the system has not been powered on yet.)	After turning on the power, wait for the OS to start. When the OS starts and duplex mode is established, the indications will return to normal. If not, check the status LEDs and then take the appropriate actions. If the problem persists, contact your sales agent.
Red	Green	Red	Off	The CPU module 1 is performing diagnosis (Diag).	
Red	Off	Red	Green	The CPU module 2 is performing diagnosis (Diag).	
Red	Amber	Off	Amber	The CPU module 1 memory is being dumped. (This occurs only when maintenance is being performed.)	-
Red	Amber	Off	Off		
Off	Amber	Red	Amber	The CPU module 2 memory is being dumped. (This occurs only when maintenance is being performed.)	-
Off	Off	Red	Amber		

Tips: When the status LED 1 is off, the colors of the status LED 2 indicate the following. You must be careful especially when detaching modules.

- Green: Unmounting the module has no effect on the system operation.
- Amber: Unmounting the module cause a system down.

PCI Board Slot Status LEDs (P1, P2, P3)

To show the status of PCI board slots, each PCI module has three status LEDs.

LED indications	Description	Action
Off	PCI board is mounted correctly and operates in duplex mode.	The system operates normally.
	The PCI board is not mounted; is mounted incorrectly; or power is not supplied.	If the PCI board is not mounted or is mounted incorrectly, just mount it correctly; there is no problem. Check the condition of power unit. If the problem persists, contact your sales agent.
Amber	PCI board is mounted correctly and operates in simplex mode.	Simplex mode is not a problem. To make the server fault-tolerant, attach a PCI board to a slot of the same on the other PCI module.
Red	Although the PCI board is mounted, it may be offline or not be working.	Remount the PCI board correctly. Remount the PCI module correctly. If the problem persists, contact your sales agent.

For LED indications when option boards are attached, see “PCI Module” in Chapter 8.

Disk LED

A DISK LED shows the status of a hard disk that is mounted in a slot of the 3.5-inch hard disk drive bay. Combined, the disk LEDs on PCI modules 1 and 2 show the status of the hard disks.

PCI module 1	PCI module 2	Description	Action
Green/Off*	Green/Off*	The hard disk drives are mirrored and operating normally.	-
Green/Off*	Amber	Mirroring the DISKs by the RDR function.	Wait for the mirroring to be completed.
		Some trouble occurred on a hard disk of the PCI module 1. The hard disk drive in the PCI module 2 is running without mirror.	Reconfigure the hard disk mirror. (See “DISK OPERATIONS” in Chapter 3, Windows Setup and Operation) If the problem persists, contact your sales agent.
Amber	Green/Off*	Mirroring the DISKs by the RDR function.	Wait for the mirroring to be completed.
		Some trouble occurred on a hard disk of the PCI module 2. The hard disk drive in the PCI module 1 is running without mirror.	Reconfigure the hard disk mirror. (See “DISK OPERATIONS” in Chapter 3, Windows Setup and Operation) If the problem persists, contact your sales agent.
Amber	Amber	Mirroring DISK by Disk Management.	Wait until the mirroring is finished.

* The DISK LEDs becomes off (blinks) when the hard disk drive is accessed.

TIPS:

- When there are many accesses, the access LED will blink frequently. Check if the LED blinks in green when the number of accesses decreases, or if it is green when there are no accesses anymore.
- When you power on NEC Express5800/ft series and the access LEDs do not illuminate green, remount the hard disks.

LAN Connector LEDs

Two LAN ports (connectors) located in the back have two LEDs each.

- 100/10 LED (LAN connector 2), 1000/100/10 LED (LAN connector 1)

  These LEDs show the transfer rate of the network that is being connected.

LED indications	LAN connector 1 1000/100/10	LAN connector 2 100/10
Amber	Operating as 1000BASE-T.	Operating as 100BASE-TX.
Off	Operating as 100BASE-TX or 10BASE-T.	Operating as 10BASE-T.

- LINK/ACT LED

  The LINK/ACT LED shows the status of a standard network port. It is green if power is supplied to the main unit and hub, and they are connected correctly (“LINK”). It blinks green while the network port sends or receives data (ACT).

  When the LED does not illuminate during “LINK,” check the condition and connection of network cables. If there is nothing wrong with the cables, a defect is suspected in the network (LAN) controller. In this case, contact your sales agent.

BASIC OPERATION

This section describes basic operation procedures of NEC Express5800/ft series.

Locking and Unlocking the Front Bezel

The front bezel covers built-in components of the server such as the POWER switch, CD-ROM drive, and hard disks.

The tower model server has a door-type bezel (it can also be detached). The rack-mount model server has a cover-like detachable bezel

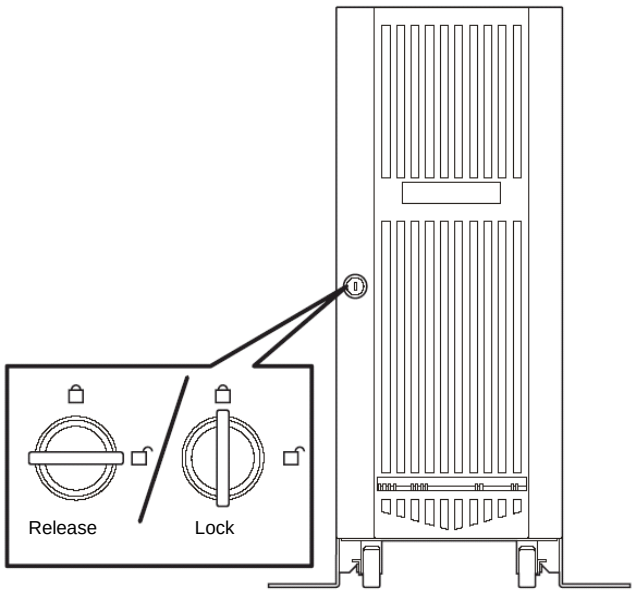
You need to open the front bezel when you access the POWER switch, CD-ROM drive or hard disk.

IMPORTANT:

- Without using the security key, you cannot open or detach the front bezel.
- It is not recommended to use the server with its bezel detached.

Tower Model

Insert the security key into the slot and turn it to release the lock. Hold the handle on the left side of the bezel and pull it. After closing the front bezel, lock it with the key for security.



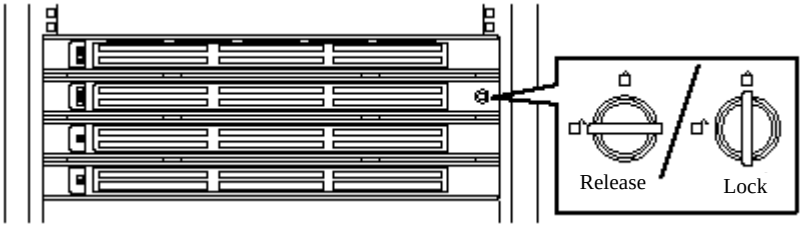
Rack-mount Model

The rack-mount model server is equipped with a detachable front bezel.

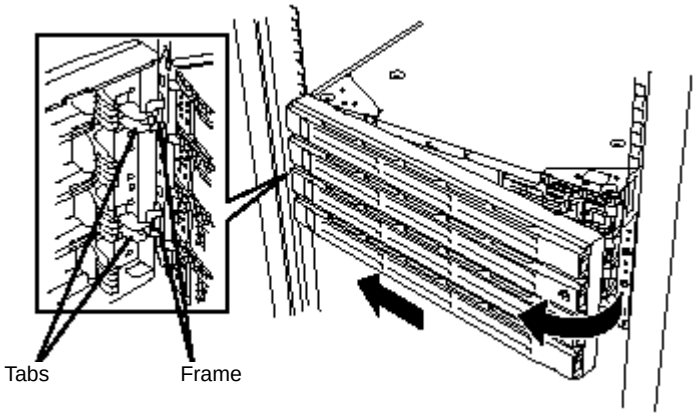
Detach

Follow the steps below to detach the front bezel:

1. Insert the security key into the slot and turn it with a little pressure to release the lock.



2. Hold the right side of the front bezel lightly and pull it open.
3. Detach the bezel from the main unit by sliding it to the left a little to disengage the tabs from the frame.



Attach

To attach the front bezel, engage the tabs on the frame on the left side of the main unit. After attaching and closing the front bezel, lock it with the key for security.

Power ON

To power on NEC Express5800/ft series, press the POWER switch located on the front panel.

Follow the steps below to turn on the power. (A rack-mount model is shown here for convenience of explanation. However, the steps are the same for a tower model except that the modules are mounted vertically.)

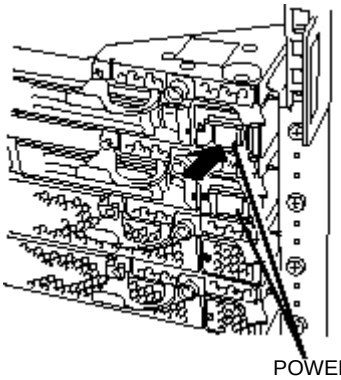
1. Power on the display unit and other peripheral devices connected to the server.

TIPS:

- If the power cord is connected to a power controller like a UPS, make sure that it is powered on.
- When NEC Express5800/ft series is powered on, BMCs between the two PCI modules are synchronized. (The BMC status LED on secondary module blinks.) See Chapter 2 “LEDs” for details of the BMC status LED.

2. Detach the front bezel (or open it in the case of a tower model).
3. Confirm that the BMC status LED on both PCI modules are off and press the POWER switch which illuminates green and located on the front panel.

   After a while, the "NEC" logo will appear on the screen.



IMPORTANT:

- Do not turn off the power before the "NEC" logo appears.
- When powering on, make sure that the BMC status LED on the both PCI modules are off and then press the power switch.

While the "NEC" logo is displayed on the screen, NEC Express5800/ft series is performing a power-on self test (POST) to check itself. For details, see "POST Check" described later in this chapter. Upon the completion of POST, the OS will start.

TIPS: If the server finds errors during POST, it will interrupt POST and display the error message. See Chapter 7.

Power OFF

Follow the steps below to turn off the power. If NEC Express5800/ft series is plugged to a UPS, see manuals included with the UPS or the application that controls the UPS.

1. Perform a normal shutdown from Windows Server 2003.

   The system will be powered off automatically. (Note: the POWER LED on the primary side will remain illuminating when AC power is supplied.)

2. Power off all peripheral devices.

POST Check

POST (power-on self test) is a self-test function stored on the motherboard of NEC Express5800/ft series.

When you power on the server, POST will start automatically to check the motherboard, ECC memory modules, CPU modules, keyboard, mouse, etc. It also shows startup messages for various BIOS setup utilities.

According to the factory default settings, the “NEC” logo appears on the display while POST is being performed. (To view POST’s details, press **Esc**.)

TIPS:

- You can view POST details from the beginning without the need to press **Esc** when the BIOS menu is displayed: select [System Configuration] - [Advanced], and set [Boot-time Diagnostic Screen] to "Enabled" (see Chapter 4).
- You can view the test items and details from a management PC where NEC ESMPRO Manager or NEC MWA is installed.

You don't always need to check POST details. You will need to check messages when:

- You install a new NEC Express5800/ft series.
- A failure is suspected.
- You hear several beeps between the time of the power-on and OS start-up.
- The display unit or the LCD* shows an error message.

  *For details, see “Error Messages on the Liquid Crystal Display (LCD)” in Chapter 7.

TIPS: Although there is no LCD on the front of NEC Express5800/ft series, you can check error messages using NEC MWA or NEC ESMPRO Manager. For details, see Chapter 7.

Flow of POST

This section walks you through how POST is performed.

1. When you power on the system, one selected CPU/PCI module will start up.

   POST will be performed on this selected CPU/PCI module.

2. Memory check starts.

   A message appears at the upper left of the screen to show that the basic and expanded memories are being counted. The memory check may take a few minutes to complete depending on the server's memory size. Likewise, it may take about one minute for the screen to appear when the server is rebooted.

   Note that if you have replaced the PCI module, the server will perform a reset of the MAC address, then reboot itself before the memory check.

3. The server starts processor check, IO check, and initialization.

   Several messages appear: they show the ID of the selected CPU/PCI modules, information on the processor, detection of the keyboard and mouse, etc.

4. A message appears at the lower left of the screen, prompting for startup of the BIOS setup utility "SETUP."

   ```
   Press <F2> to enter SETUP
   ```

   You will need to start it when you want modify the configuration for using the server. Unless this message appears together with an error message, you don't need to start the utility to modify the configuration. (If you wait for a few seconds, POST will go on automatically.)

   To start the SETUP utility, press **F2** while the above message is displayed. For setting and parameter functions, see the section of BIOS setup.

   When SETUP is completed, the server will reboot itself automatically and perform POST.

5. A message appears prompting for startup of SCSI BIOS setup utility.

   When a built-in SCSI controller is detected, a message will appear prompting for startup of SCSI BIOS setup utility. (If you wait for a few seconds, POST will go on automatically.)

   If you press **Ctrl** + **Q**, the SCSI BIOS setup utility will start. For setting and parameter functions, see the section on SCSI setup.

   You will need to use this utility, for example, when you have changed the server's internal SCSI device connections. However, you usually don't need to use it.

   When SETUP is complete, the server will reboot automatically and perform POST again.

   If multiple SCSI controller boards are mounted on the PCI bus, the SCSI BIOS startup message will appear for these boards in numerical order (PCI #1, PCI #2, PCI #3…).

6. The screen shows SCSI ID numbers used by the connected SCSI devices.

7. Upon completion of POST, the password entry screen appears prior to OS startup.

   The password entry screen will appear after the normal termination of POST only if you have set a password in the BIOS setup utility "SETUP."

   You can enter a password up to three times. If you enter an incorrect password three times, the startup will be unsuccessful. In this case, turn off the power and then turn it on again after waiting 30 seconds to boot the server.

   IMPORTANT: Do not set a password before installing the OS.

8. Upon completion of POST, the OS will start up.

Behavior at Occurrence of Error

If POST or OS startup does not finish normally, the server will reboot itself automatically.

At the time of reboot, it will select the other CPU/PCI module and run POST or OS startup.

In this manner, the server retries POST or OS startup with different combinations of CPU/PCI modules. If POST does not finish normally with any combinations, the server will stop with the state of DC OFF.

While performing retries, the server displays or registers the error types.

For details of error messages, see Chapter 7 "Troubleshooting."

POST Error Messages

When the server detects an error during POST, it will notify you of the occurrence in the following manners:

- Displays an error message on the display unit.
- Displays an error message on the LCD*.
- Makes a beeping sound.

*For details, see "Error Messages on the Liquid Crystal Display (LCD)" in Chapter 7.

These notification methods are described in "POST Error Messages" in Chapter 7.

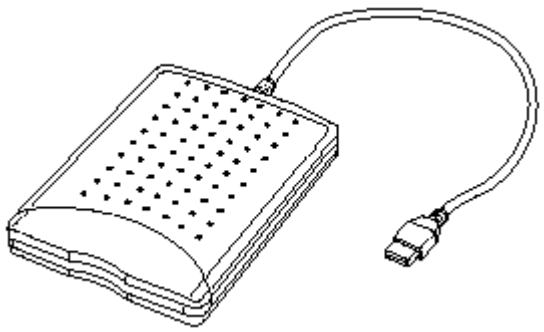
IMPORTANT: Before you contact your sales agent, write down the error messages and patterns of the beeping sound. They will serve as helpful information at the time of maintenance.

Floppy Disk Drive

A USB floppy disk drive is attached to the main unit. It allows you to read and write (save) data using floppy disks.

The USB floppy disk drive accepts the following types of floppy disks:

- 2HD floppy disk (1.44MB)
- 2DD floppy disk (720KB)



Drive letter of floppy disk drive

The drive letter will change when the primary PCI module is switched to the standby PCI module while the Windows operating system is in operation. The drive letter of the floppy disk will be determined as follows:

"A" will be assigned to the floppy disk drive for the PCI module that is operating as the primary PCI module during Windows operating system boot-up. "B" will be assigned to the floppy disk drive for the standby PCI module.

Ex) If a floppy disk drive was connected for the first time while the primary PCI module is group 1.

Primary PCI module

PCI module (for group 1): A drive

PCI module (for group 2): B drive

IMPORTANT: In the event that the active PCI module switches to the standby PCI module due to a failure while the system is in operation, the floppy disk drive letter will change at the point PCI module switches to the standby module.

Insert/Remove Floppy Disk

Before inserting a floppy disk into the drive, make sure that NEC Express5800/ft series is on and that the drive's USB cable is connected to the USB connector at the back of the server.

Insert a floppy disk into the drive firmly with the label side up and its protective shutter facing the drive.

TIPS:

- If you insert an unformatted disk, you will see a message that the disk cannot be read or that needs formatting. To format a floppy disk, see your OS manual.
- If you power on or restart NEC Express5800/ft series with a floppy disk left in the drive, the server will access the floppy disk to start the system. Unless a system exits on the FD, the server will be unable to start.

To remove a floppy disk from the drive, press the eject button.

TIPS: Before removing a floppy disk, make sure that the access LED is off. If you eject a floppy disk while the LED is on, the stored data could be damaged.

Use of Floppy Disk

You may need to store important data on floppy disks. Since the floppy disk is a very delicate medium, you must handle it with extra care:

- Push the floppy disk gently into place.
- Attach the label on a proper position.
- Do not use a pencil or ballpoint pen to write on the disk.
- Do not open the protective shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a place that is subject to direct sunlight or high temperatures (e.g., near a heater).
- Keep away from cigarette smoke.
- Do not leave the floppy disk near water or chemicals.
- Keep away from magnetic objects.
- Do not clip disks. Be careful not to drop.
- Store floppy disks in a protective case where they are kept away from magnetic waves or dust.
- To prevent data from being erased accidentally, the floppy disk has a write-protect notch. When the disk is write-protected, you can read data, but you cannot write the data or format the disk. It is recommendable to write-protect floppy disks that contain important data. To write-protect a floppy disk, slide the write-protect notch located on its back.
- The floppy disk is a very delicate storage medium. Dust or changes in temperature could cause data to be lost. Data loss could also be caused by faulty operation and computer trouble. To avoid such possible data loss, it is recommendable to back up important data regularly. (Be sure to make back-up copies of the disks that are included with NEC Express5800/ft series.)

CD-ROM Drive

NEC Express5800/ft series has a CD-ROM drive on the front panel. It is a device used to read data from a CD-ROM (compact disc read-only memory). Compared to a floppy disk, a CD-ROM allows for larger volume and fast data readout.

⚠ CAUTION

Observe the following instructions to use the server safely. There are risks of a burn, injury, or damage to physical assets. For details, see PRECAUTIONS FOR SAFETY in Chapter 1.

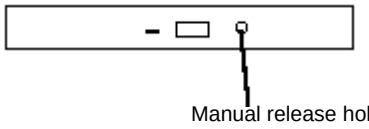
- Do not leave the CD tray ejected.

About the CD-ROM Drive of NEC Express5800/ft series

Each PCI module contains a single CD-ROM drive in NEC Express5800/ft series, but only the CD-ROM drive on the primary side can be used.

When you cannot eject a CD-ROM

When you cannot eject the CD-ROM by pressing the eject button, follow the steps below to eject it:



1. Press the POWER switch to power off the server.
2. Use a metal pin of about 1.2 mm in diameter and 100 mm long (alternatively, you can use a fairly large paper clip after straightening). Insert it gently into the manual release hole located to the right of the eject button until the tray is ejected.

IMPORTANT:

- Do not use a toothpick, plastic pin, or other breakable objects.
- If you cannot eject the CD-ROM by following the steps above, contact your sales agent.

3. Hold the tray and pull it out.
4. Take out the CD-ROM.
5. Push the tray back.

Use of CD-ROM

Observe the following when you use a CD-ROM on NEC Express5800/ft series:

- As for a disk such as a noncompliant “copy-protected CD,” we shall not guarantee that you can use a CD player to play it with this server.
- Be careful not to drop the CD-ROM.
- Do not bend or place anything on the CD-ROM.
- Do not attach labels on the CD-ROM.
- Do not touch the signal side (blank side).
- Place the CD-ROM gently on the tray with the printed side up.
- Do not scratch, or use a pencil or ballpoint pen to write on the CD-ROM.
- Keep away from cigarette smoke.
- Do not leave the CD-ROM in a place that is subject to direct sunlight or high temperatures (e.g., due to a heater).
- If the CD-ROM gets dirty with dust or fingerprints, wipe it gently from its center to edge with a dry soft cloth.
- When you clean the CD-ROM, use a CD cleaner. Do not use a record cleaner (spray), benzine, or thinner.
- Store the CD-ROM in a protective case when not in use.

(This page is intentionally left blank.)

Chapter 3

Windows Setup and Operation

This chapter describes setup procedures to make NEC Express5800/ft series ready for use.

DISK OPERATIONS

NEC Express5800/ft series duplicates disks to secure data by using “Disk Management” or the “Rapid Disk Resync (RDR) function”. This section describes operations such as configuration of dual settings to disks and replacement of disks.

IMPORTANT:

On the disks containing the OS, it is recommended to create only the system partition. To create a partition other than a system partition on the disk with the OS, note the following:

If you reinstall the OS, the entire disk will be cleared. If there is any data partition other than the system partition, the data must be backed up before reinstalling the OS.

Operations differ depending on the model of NEC Express5800/ft series. Choose the suitable procedure:

Models that do not support the RDR (Rapid Disk Resync) function:
Go to “Disks Operations Using Disk Management” (page 3-3).

Models that support the RDR (Rapid Disk Resync) function:
Skip to “Disk Operations Using the RDR (Rapid Disk Resync) Function” (page 3-15).

Disks Operations Using Disk Management

Disk Management

NEC Express5800/ft series (which does not support the RDR function) ensures reliability by executing software mirroring to hard disk volumes using Windows. Use Windows' "Disk Management" to manipulate volumes.

Refer to the online help for the operating procedures of "Disk Management".

Steps to refer to the help of operating procedures:

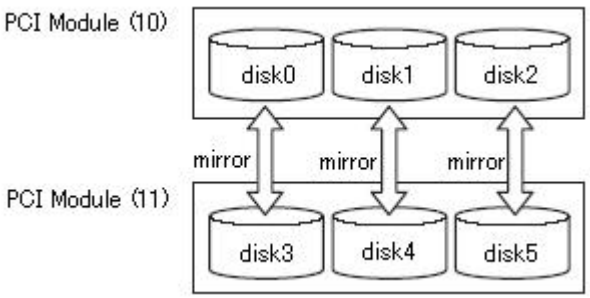
1. Click [Start] - [Help and Support].
2. Select [Disks and Data] from the topics on the help.
3. Select [Managing Disks and Volumes] - [Disk Management] - [How To…], then check the operating procedures.

Hard Disk Configurations that can be built on the NEC Express5800/ft series

In the NEC Express5800/ft series, all volumes need creation of mirror disks. You can create mirror disks only on the dynamic simple volume as shown in the table below.

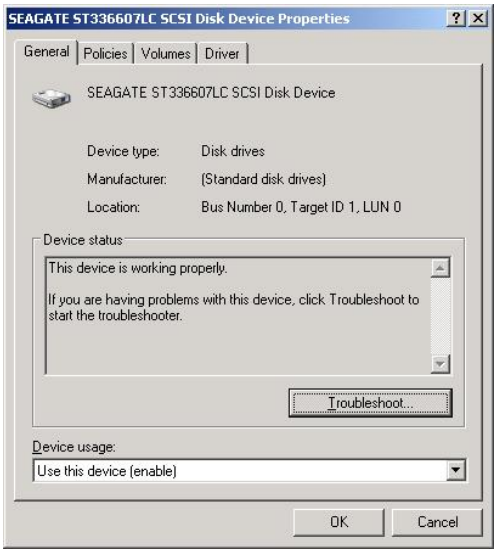
Volume type	Can/cannot be built
Dynamic simple volume	√
Dynamic span volume	–
Dynamic mirror volume	–
Dynamic stripe volume	–
Dynamic RAID5 volume	–

Create mirror disks by selecting disks that are in the same slot of the SCSI enclosure. For example, if the hard disks are positioned as shown in the table below, define hard disks 0 and 3, hard disks 1 and 4, and hard disks 2 and 5 as mirrored pairs.



The pairs of mirror disks as shown above can be created by selecting hard disks whose target IDs are identical in the disk properties, which are displayed through [Disk View]. The following explains how to confirm the target ID:

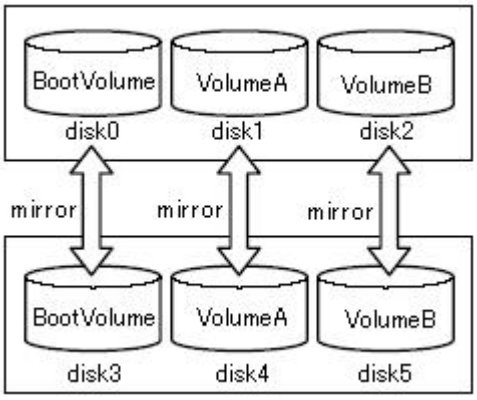
1. Click [Start] → [Administrative Tools] → [Computer Management]. The [Computer Management] window appears.
2. Click [Disk Management] under [Storage] in the console tree.
3. Right-click the disk and point to Properties to confirm the target ID. The target ID in the example shown here is “1”.



4. Similarly, confirm the target IDs of the other disks.

Disk No	Target ID
Hard disk 0	0
Hard disk 1	1
Hard disk 2	2
Hard disk 3	0
Hard disk 4	1
Hard disk 5	2

When disk numbers and target IDs are matched as shown above, define hard disks 0 and 3, hard disks 1 and 4, and hard disks 2 and 5 as mirrored pairs, and add mirror volumes.



Configuring and Breaking Mirror

This section describes the procedures to configure and break the mirror of hard disk volumes using Disk Management.

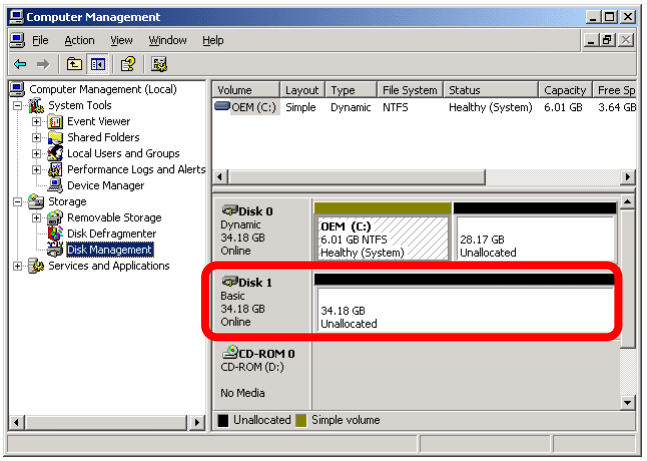
Configuring mirror

Follow the procedures below to configure a volume mirror.

IMPORTANT:

Set mirror to the disks whose Target IDs are identical.
For details, see “Hard Disk Configurations that can be built on the NEC Express5800/ft series (page 3-3).”

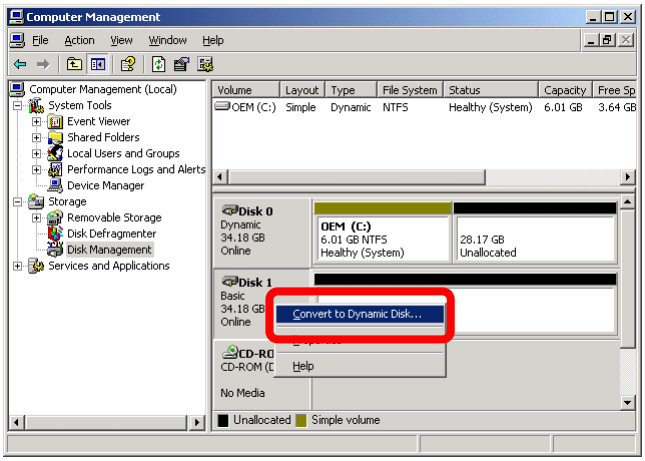
1. Click [Start] - [Administrative Tools] then [Computer Management].
   The [Computer Management] dialog box will appear.
2. Click [Disk Management] under [Storage] in the console tree.
   The [Disk Management] window will appear on the right panel.
3. Insert a new disk. The disk will appear on the [Disk Management] window.



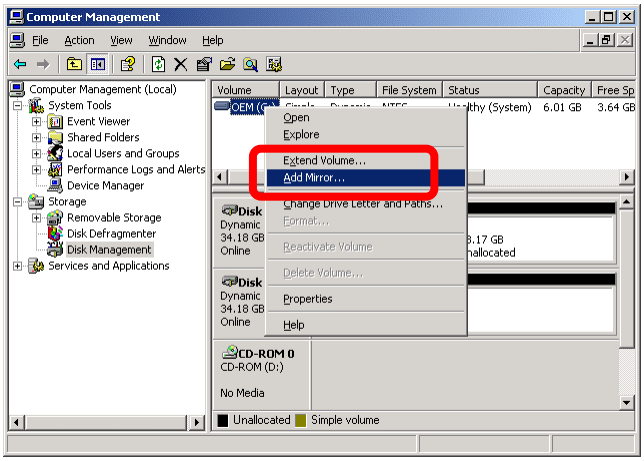
IMPORTANT:

- If the status of the disk is “Not Initialized”, right-click the disk and initialize it.
- If [Foreign] appears, right-click the disk and execute [Convert to Basic Disk…].

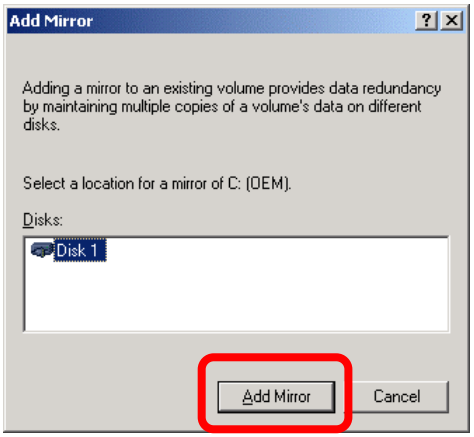
4. Select and right-click a disk, and then execute [Convert to Dynamic Disk…].
On the [Convert to Dynamic Disk] dialog box, select the disk and click [OK].



5. Right-click the volume of the dynamic disk to mirror and click [Add Mirror…].



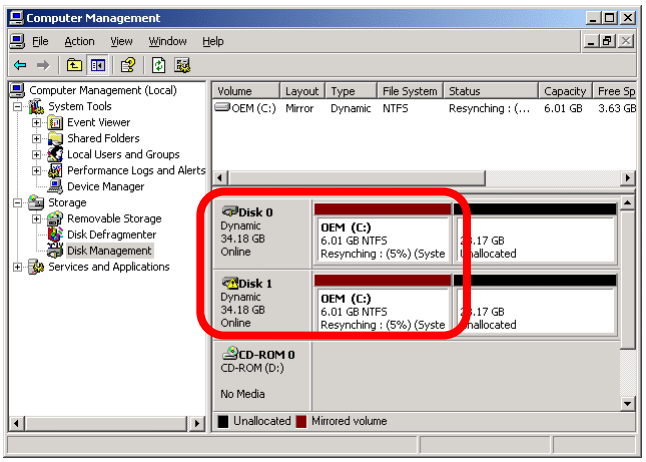
6. On the [Add Mirror] dialog box, select the disk to mirror and click [Add Mirror].


Add Mirror
Adding a mirror to an existing volume provides data redundancy by maintaining multiple copies of a volume's data on different disks.
Select a location for a mirror of C: (OEM).
Disks:
Disk 1
Add Mirror
Cancel

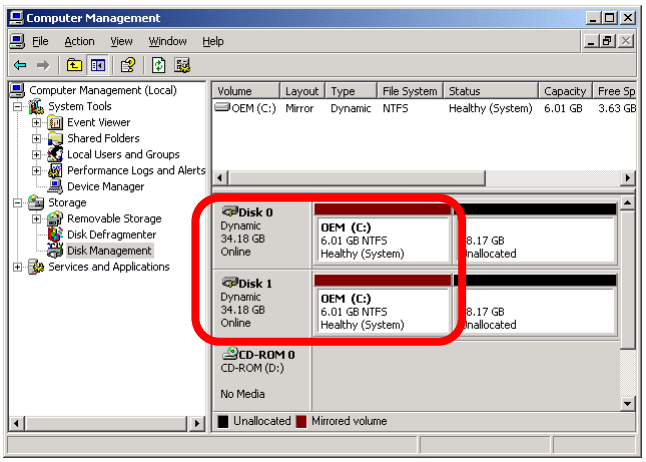
IMPORTANT:

- Clicking [Add Mirror] displays the [Logical Disk Manager] dialog box, but there is no problem. Click [OK].
- If the server is rebooted during mirror generation, mirroring will not be completed. Do not reboot the server until the mirroring process is completed.

7. The volume status changes to "Resynching".



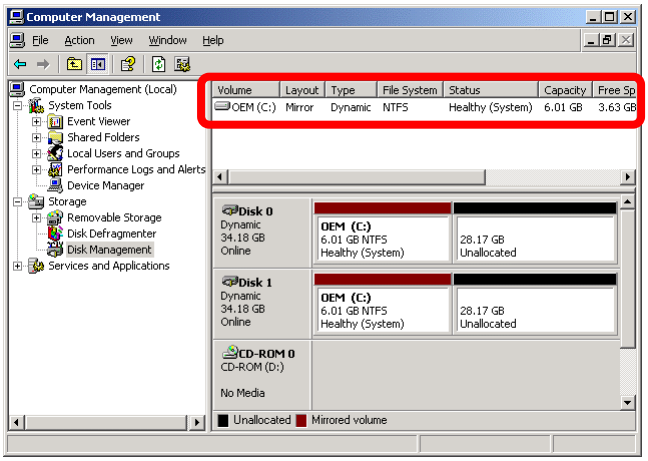
8. The mirror configuration is completed if the volume status changes from "Resyching" to "Healthy".



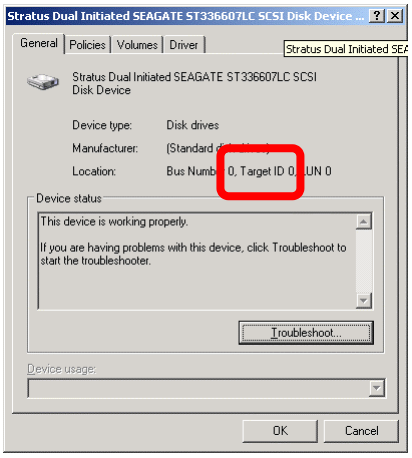
Confirming if Paired Disks are Mirrored Properly

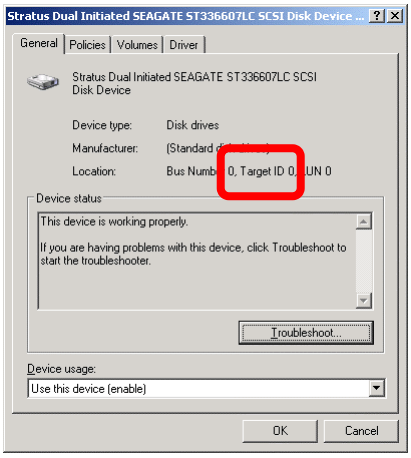
Check the following to confirm that the mirror is configured properly:

- Is disk mirroring completed successfully?
  Disk mirroring is completed properly if the volume layout is [Mirror], and the status is [Healthy] on the [Disk Management] window.



- Is the mirror configured on the disks of the proper position?
  On the [Disk Management] window, right-click the mirrored disks and select [Properties]. Click the [General] tab and check if the Target IDs are identical. (In the case below, the Target ID is “0”.)





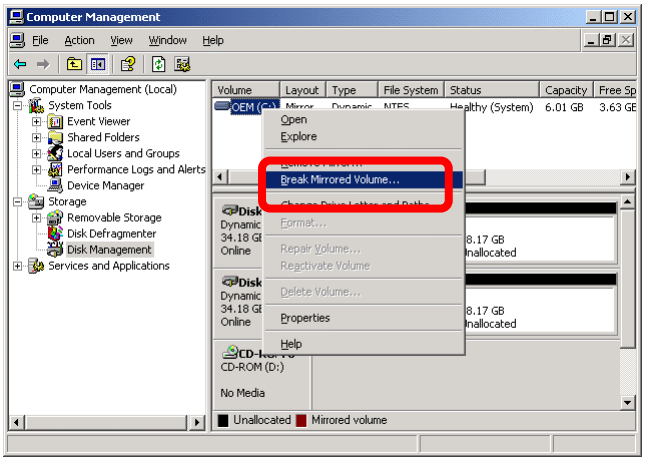
Breaking mirror

Follow the procedures below to break the mirror of volumes.

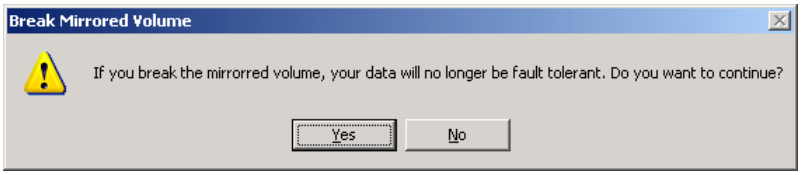
The procedures to break a mirror on C drive are discribed here.

1. Click [Start] - [Administrative Tools] - [Computer Management]. The [Computer Management] window will appear.

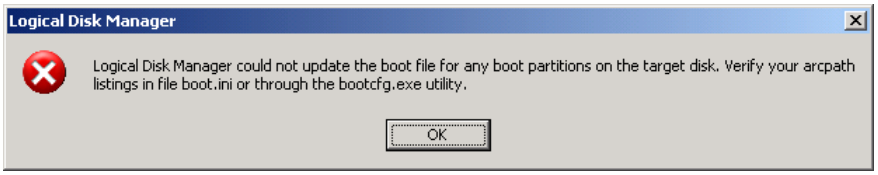
2. Right-click the volume of the dynamic disk whose mirror is to be broken and click [Break Mirrored Volume…].



3. Click [Yes] on the [Break Mirrored Volume] dialog box.

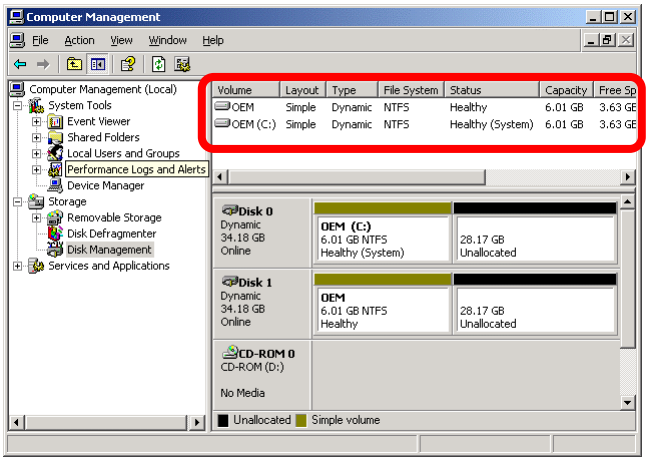

Break Mirrored Volume
If you break the mirrorred volume, your data will no longer be fault tolerant. Do you want to continue?
Yes
No

4. Click [OK] on the [Logical Disk Manager] dialog box. (This dialog box is not displayed for data volume.)


Logical Disk Manager
Logical Disk Manager could not update the boot file for any boot partitions on the target disk. Verify your arcpath listings in file boot.ini or through the bootcfg.exe utility.
OK

5. The mirror is broken and the volumes will be converted to simple volumes.
In the figure on the right, the status of the volumes are as follows:

[System Volume]
Volume: OEM(C:), Status: Healthy (System)
[Broken Volume]
Volume: OEM, Status: Healthy



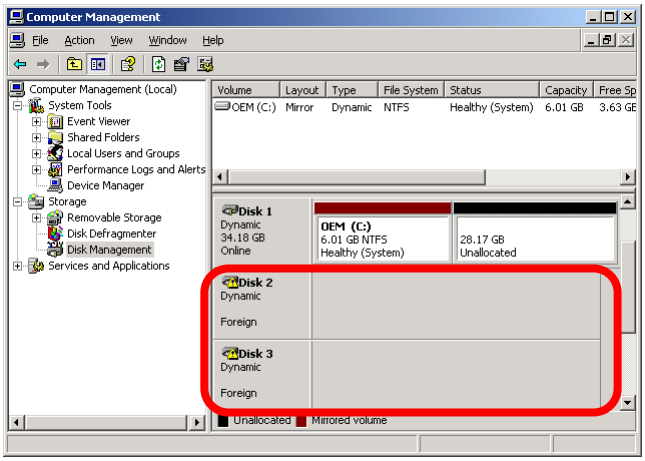
Importing Data Disks

This section describes a procedure to import a data disk using Disk Management.

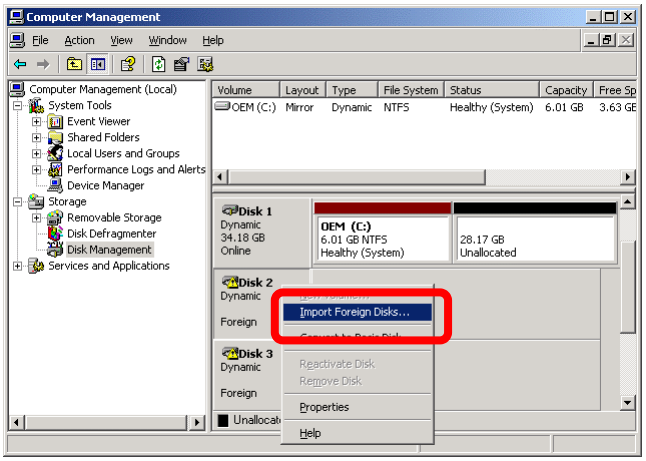
IMPORTANT: If you import the disk used as a boot disk on another system, it becomes impossible to boot from the disk.

1. Insert the disk to import.

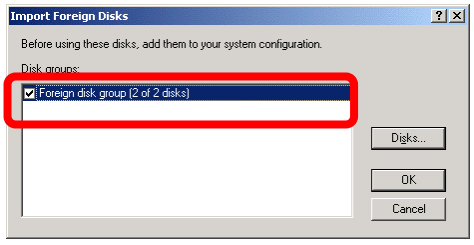
2. Foreign Dynamic Disk is displayed on [Disk Management].
   In the figure on the right, Disk 2 and Disk 3 are the inserted disks.



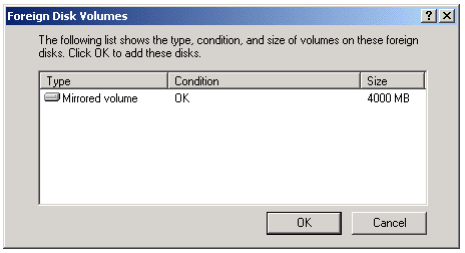
3. Right-click the disk to import and select [Import Foreign Disks…].



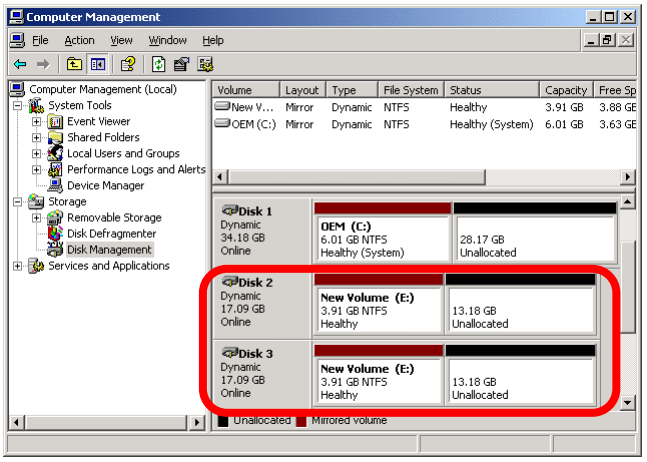
4. In the [Import Foregn Disks] dialog box, select the disk group to import and click [OK].



5. In the [Foreign Disk Volumes] dialog box, check the volumes to import, and click [OK].



6. The disk import is completed if the disk status changes from “Foreign” to “Online”.



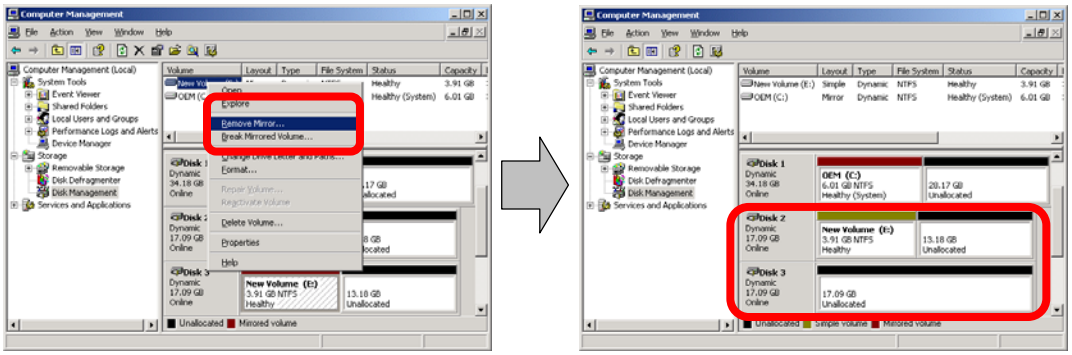
Extending Data Volume Size

This section describes a procedure to extend a volume size using Disk Management.

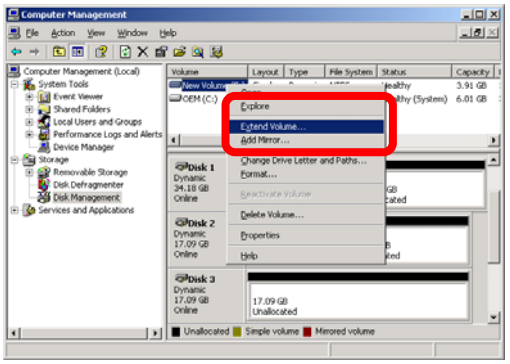
IMPORTANT:

- It is not possible to extend boot volume.
- As it is not possible to extend mirror volume, a mirror volume is extended in the following order: [Remove Mirror] - [Extend Volume] - [Add Mirror].

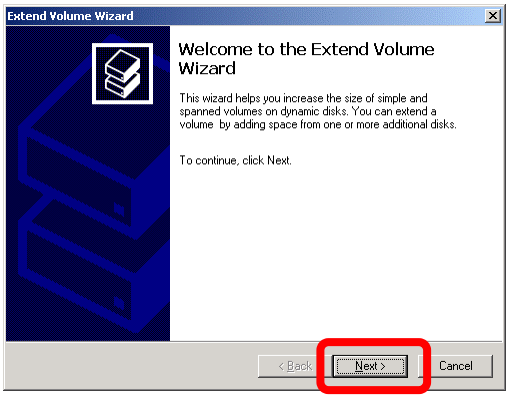
1. Remove the mirror of the volume you want to extend, and make it a simple volume.
(In the case below, the mirror of the volume (E:) is removed to extend the volume (E:).)



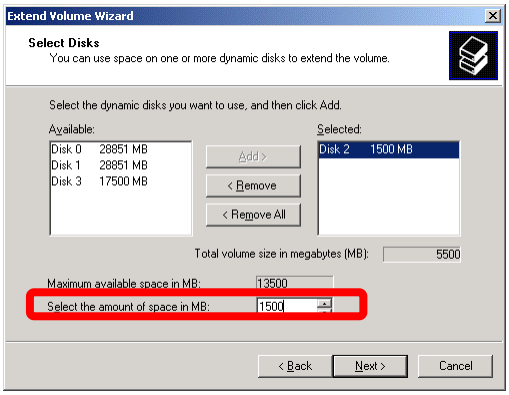
2. Right-click the volume to be extended and click [Extend Volume…].



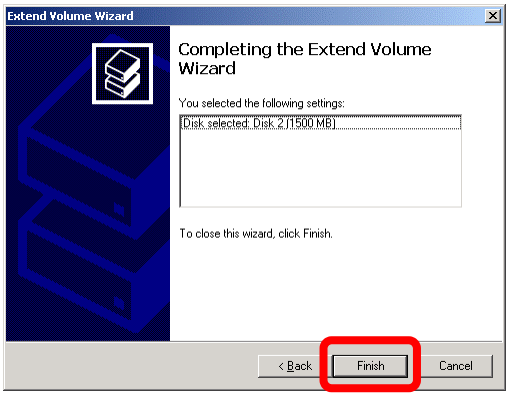
3. When the [Welcome to the Extend Volume Wizard] dialog box of the Extend Volume Wizard appears, click [Next].


Extend Volume Wizard
Welcome to the Extend Volume Wizard
This wizard helps you increase the size of simple and spanned volumes on dynamic disks. You can extend a volume by adding space from one or more additional disks.
To continue, click Next.
< Back
Next >
Cancel

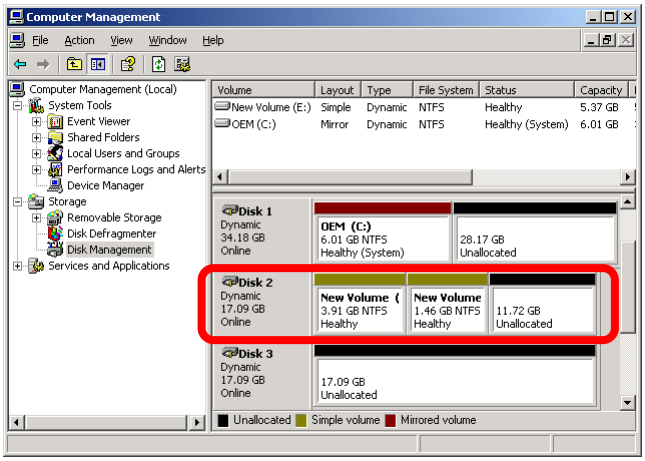
4. On the [Select Disks] dialog box, enter the amount of space to extend and click [Next]. (In this case, 1500MB is added.)


Extend Volume Wizard
Select Disks
You can use space on one or more dynamic disks to extend the volume.
Select the dynamic disks you want to use, and then click Add.
Available:
Disk 0 28851 MB
Disk 1 28851 MB
Disk 3 17500 MB
Add >
< Remove
< Remove All
Selected:
Disk 2 1500 MB
Total volume size in megabytes (MB): 5500
Maximum available space in MB: 13500
Select the amount of space in MB: 1500
< Back
Next >
Cancel

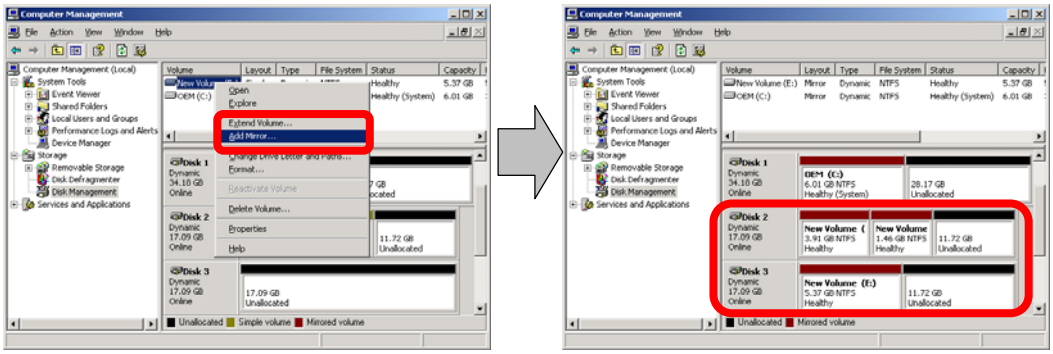
5. Check the settings on the [Completing the Extend Volume Wizard] dialog box and click [Finish].



6. The size of the volume is extended.



7. Configure the mirror of the extended volume.



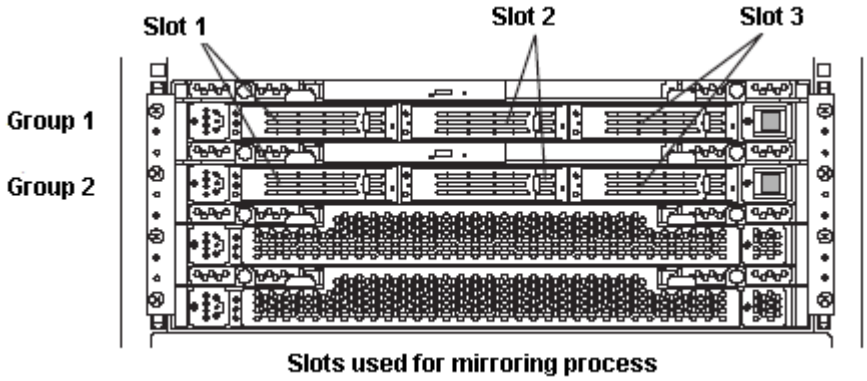
Disk Operations Using the RDR (Rapid Disk Resync) Function

RDR (Rapid Disk Resync)

Models supporting the RDR function secure reliability by making disks duplexed per disk using the ft control software's RDR function. Duplexing disks by the RDR function enables the disks to be resynchronized in a short period of time when their mirror has been broken due to causes such as PCI module replacement

Setting RDR to disks duplicates the disks of paired slots as shown in the figure below and Windows (ex. Disk Management and Device Manager) recognizes a paired disks as a single virtual disk.

[Paired slots]



Corresponding slots	Virtual disk name given by the RDR Utility
PCI module#1 Slot 1 ⇔ PCI module#2 Slot 1	RDR Virtual Disk 1
PCI module#1 Slot 2 ⇔ PCI module#2 Slot 2	RDR Virtual Disk 2
PCI module#1 Slot 3 ⇔ PCI module#2 Slot 3	RDR Virtual Disk 3

Note: In the above table, the PCI module names correspond to the following modules:
PCI module (for Group1): PCI module#1
PCI module (for Group2): PCI module#2

[Cautions for using the RDR function]

1. RDR can be set only to the disks inserted into the built-in slots of NEC Express5800/ft series.
2. Be sure to specify RDR to all disks inserted to the built-in slots and make duplex settings.
3. RDR can be set only to basic disks.
   If a span volume or stripe volume is needed, make settings of RDR to a basic disk and then change the disk to a dynamic disk from [Disk Management].
4. The disks to set RDR must have the same capacity and must be new or physically formatted.
   (For physical format, refer to "SCSI BIOS ~ Fast!UTIL ~" in Chapter 4 "System Configuration" and perform Low-Level Format using SCSI Disk Utility.)

5. The disks which RDR has been set can only be used in the system with the ft control software ver.3.0 or later.
6. If the system is shut down (or restarted) while the mirror is broken, or a long time (30 hours or longer) has passed after the mirror is broken, the mirror resynchronization target will be the entire disk.
   For example, if the mirroring has been broken due to a PCI module failure, when you shut down the system and replace the PCI module in such a state, the entire area of the disk needs to be resynchronized.
7. Insert or replace the HDD while the server is powered on if the RDR function is used. If a new HDD (non-formatted HDD on Windows OS) is inserted to the slot corresponding to the slot with the disk you specified RDR when the server is powered off, the OS may not be able to start or the HDD mirroring may not be completed properly.

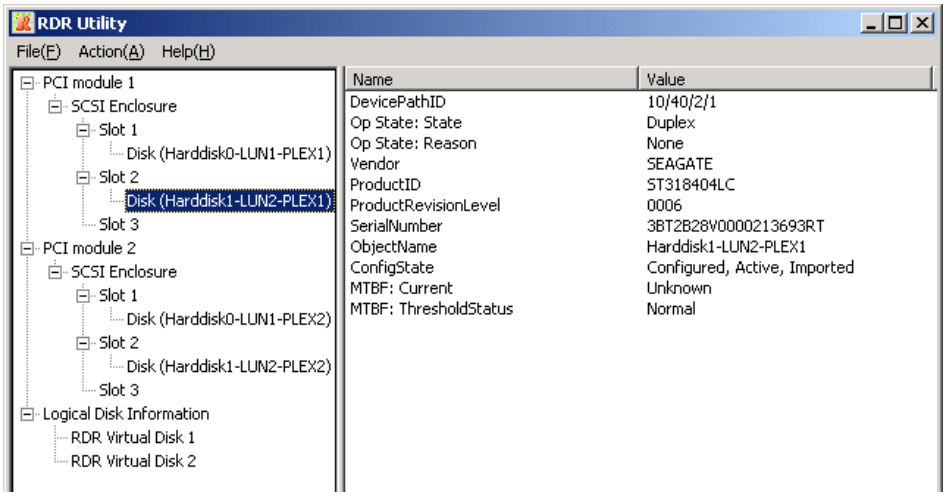
Configuring and Removing Duplexed Setting of Disks by the RDR Function

This section describes how to make disks duplex and how to remove the settings by using the RDR function. To use the RDR function, use [RDR Utility].

About RDR Utility

- Starting RDR Utility
  From [Start], select [All Programs] then [RDR] and click [RDR Utility] to start [RDR Utility].

- Screen



  Note: In RDR Utility, the PCI module names correspond to the following modules:
  PCI module 1: PCI module (for Group1)
  PCI module 2: PCI module (for Group2)

[Left frame]
The tree shows disks inserted to the built-in slots and virtual disks (RDR Virtual Disks)

created by RDR. On the models supporting RDR, right-click a disk on the tree to display the menu for setting RDR. By looking at the tree, you can know which disk corresponds to which disk of the Windows' [Disk Management] and whether RDR is set to the disk.

For example, in the case of the disk highlighted in the figure above:

Disk (Harddisk1 LUN2 PLEX1)
(1) (2) (3)

(1) Corresponds to the number of Windows' [Disk Management]. In this example, this disk is the Disk1 on [Disk Management].
(2) Corresponds to the number of a virtual disk created by RDR setting. In this example, this disk is a disk which makes up the RDR Virtual Disk 2 (only appears for disks with RDR setting).
(3) This section appears only for disks with RDR setting.

[Right frame]
The properties of the disk selected in the left frame is shown.
In the figure above, the properties of the disk inserted to the PCI module for Group1's Slot 2.

IMPORTANT:

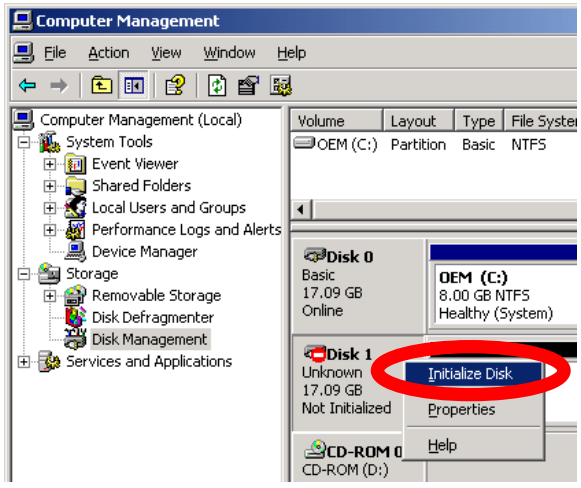
The [RDR Utility] display is not updated automatically. Therefore, update it by clicking [Refresh(R)] from [Action(A)] on the menu or pressing F5 after performing operations to disk such as inserting/removing a disk, specifying/removing the RDR setting.

Making disks duplex by RDR

The following describes the procedure to set duplex configuration to disks by RDR.
In this example, the disks of the Slot 2 of the PCI modules for Group1 and Group 2 are duplexed.

1. Insert a new disk to a built-in slot.
(In this example, a disk is inserted to the Slot 2 of the PCI module for Group1.)

2. From [Start], select [Control Panel] then [Administrative Tools] and start [Computer Management]. On the tree in the left frame, click [Disk Management].
If the inserted disk is indicated as [Not Initialized] in the right pane, right-click the disk and initialize it.



3. Start [RDR Utility].

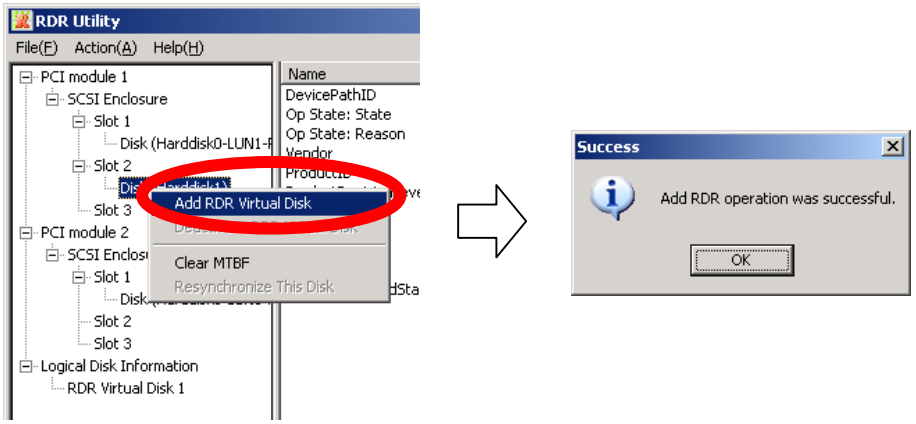
IMPORTANT:

- If the inserted disk does not appear on the tree, from the menu of [RDR Utility], select [Action(A)] and click [Refresh(R)] or press F5 to update the display after awhile.
- The display of [RDR Utility] is not updated automatically. Therefore, update it by clicking [Refresh(R)] from [Action(A)] or pressing F5 on the menu after performing operations described below.

4. On the left tree of [RDR Utility], right-click a disk to set RDR and click [Add RDR Virtual Disk].

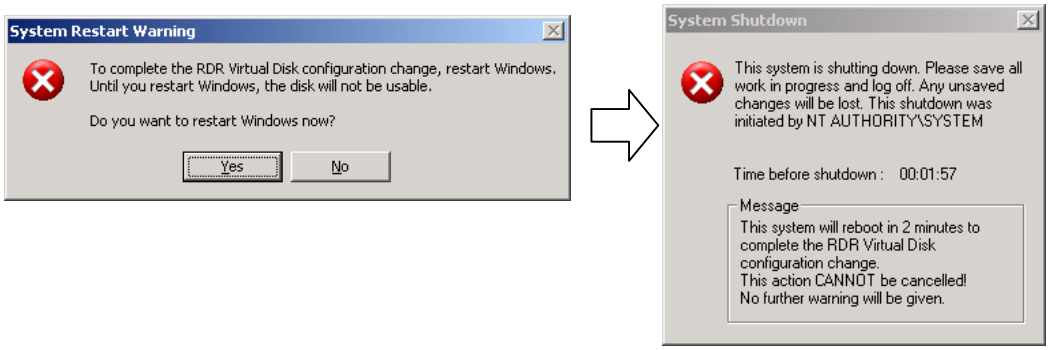
IMPORTANT:

Depending on the disk type, RDR setting may take some time and [RDR Utility] may pause for a few minutes. There is no error, so wait until the process is completed.



IMPORTANT:

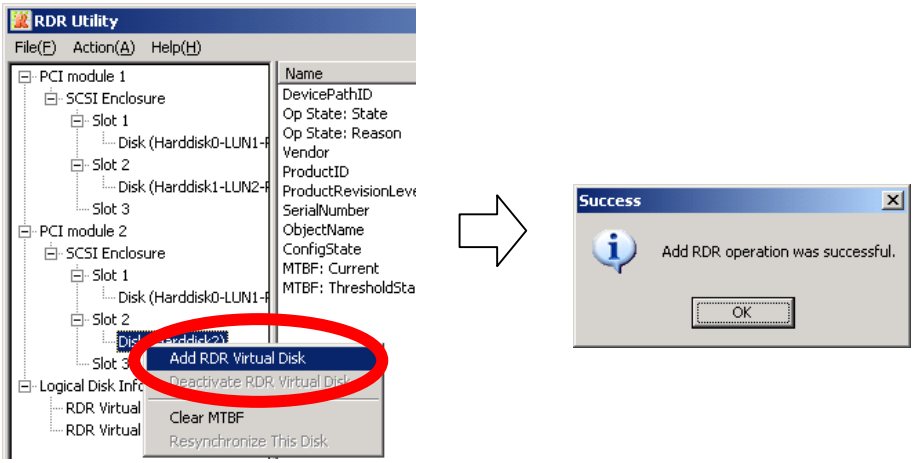
When RDR is set to a disk containing the boot partition, the following pop-up message appears, and clicking [Yes] reboots the system automatically in 2 minutes. Follow the steps 5 and on after the restart.


System Restart Warning
To complete the RDR Virtual Disk configuration change, restart Windows. Until you restart Windows, the disk will not be usable.
Do you want to restart Windows now?
Yes
No
System Shutdown
This system is shutting down. Please save all work in progress and log off. Any unsaved changes will be lost. This shutdown was initiated by NT AUTHORITY\SYSTEM
Time before shutdown : 00:01:57
Message
This system will reboot in 2 minutes to complete the RDR Virtual Disk configuration change.
This action CANNOT be cancelled!
No further warning will be given.

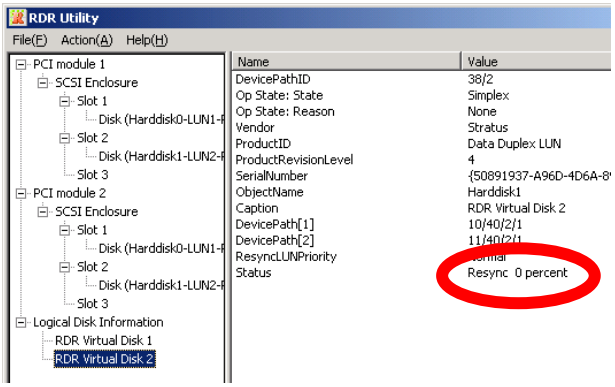
5. Insert a disk to set duplex configuration into the corresponding slot.
(In this example, a disk is inserted into the Slot 2 of the PCI module for Group2.)

6. On the left tree on [RDR Utility], right-click the disk which was inserted in the previous step and click [Add RDR Virtual Disk].

IMPORTANT:
If the inserted disk has not been initialized on Windows, RDR is set and synchronization starts automatically, so this step is not required. Skip to the next step and check the duplex status.



7. Click [Logical Disk Information] and then [RDR Virtual Disk x](x=1,2,3) to confirm that the synchronization is started.

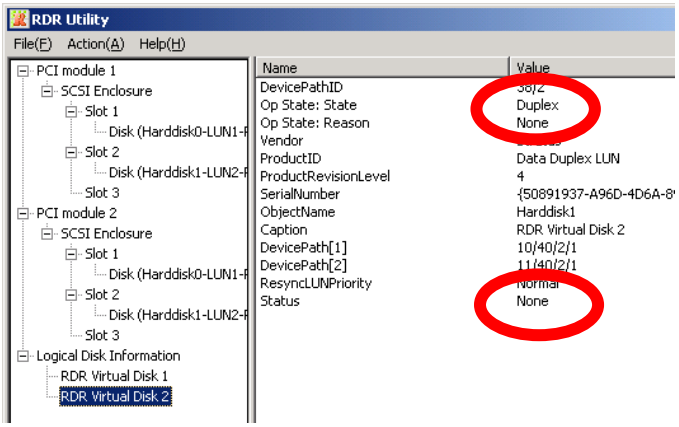


IMPORTANT:

- The time required for synchronization varies depending on the partition size on the disk.
  For 18GB partition, it takes about 16 minutes.
  When there is no partition, synchronization may be completed in a short period of time after RDR is set and the status may change to what is described in the step 8.
- The percentage changes from 0 to 25, 50, 75 depending on the synchronization process progresses.

- If the system is rebooted during synchronization, the process cannot be completed. Do not restart the system until the synchronization is completed.

8. When the [Op State: State] of [RDR Virtual Disk x](x=1,2,3) becomes [Duplex] and [Status] becomes [None], the disk synchronization is completed.



IMPORTANT:

- When a new partition is created on the disk where RDR is set, the created partition area is synchronized automatically.
- When the disk where RDR is set is converted to a dynamic disk, the area which has not been synchronized (the area that no partition exists) will be synchronized.
- When the system is shut down without shutting down Windows properly, for example, by pressing the power button, the entire area of the synchronized disks will be resynchronized after the system is restarted.

Removing duplex configuration of RDR disks

This section describes how to remove duplex configuration from the disk with RDR setting.
In the example below, the duplication setting of the disks in the Slot 2 of the PCI modules for Group 1 and for Group 2 is removed.

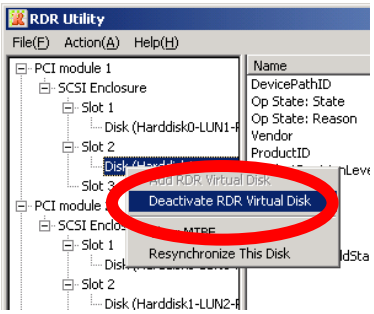
IMPORTANT:

You cannot break the duplex setting of the following disks:

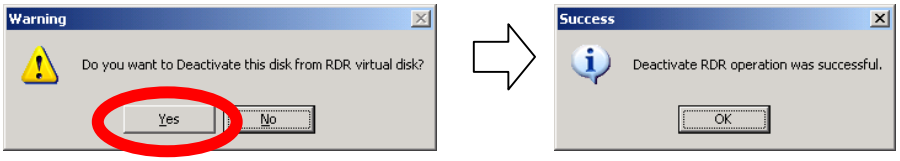
- Disk containing the boot partition or volume
- Disk containing page files
- Dynamic disk

1. Start [RDR Utility].

2. Right-click the disk to deactivate RDR and click [Deactivate RDR Virtual Disk].



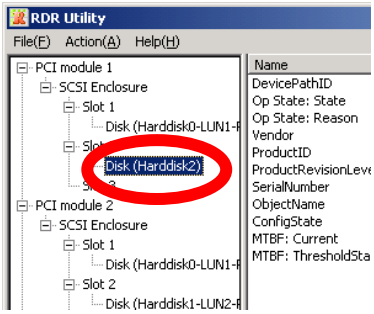
3. In the [Warning] dialog box, click [Yes].



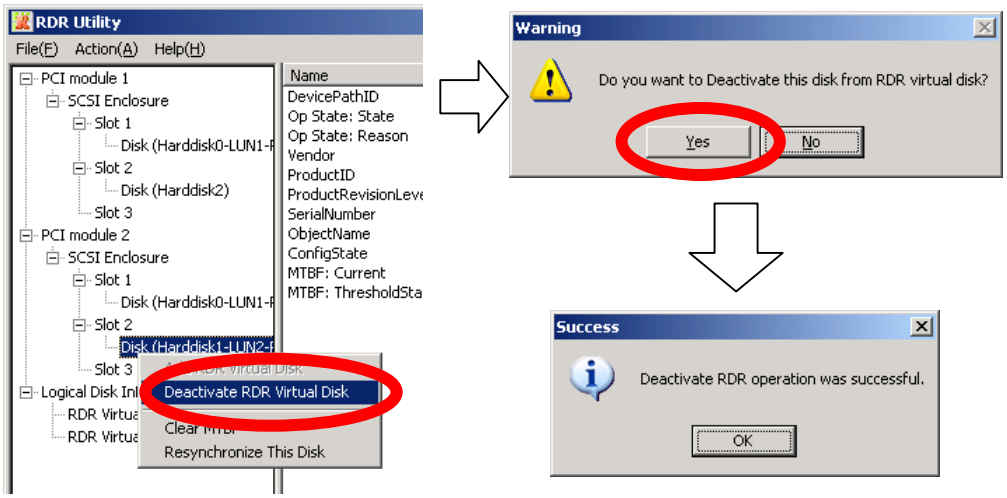
4. The RDR setting is removed from the target disk.

IMPORTANT:

- When the disk does not appear on the tree, update it by clicking [Refresh(R)] from [Action(A)] or pressing F5.
- The display of [RDR Utility] is not updated automatically. When any operation is performed to a disk, update the display manually.



5. Remove the RDR setting from the disk in the corresponding slot (the Slot 2 of the Group2) in the same manner.



IMPORTANT:

A partition on the disk where the RDR setting is removed is not assigned a drive letter. To use the partition, assign a drive letter using [Disk Management].

Other functions of RDR Utility

Clearing MTBF value

When a failure occurs to a disk, the mean time between failures (MTBF) is counted and the value is saved. In RDR Utility, the value is displayed at [MTBF: Current] and [MtbfThresholdStatus].

These MTBF values can be cleared by the [Clear MTBF] command.

1. Start [RDR Utility] and right-click a target disk on the tree in the left frame, and click [Clear MTBF].
2. In the [Success] dialog box, click [OK].

Performing resynchronization

If disk synchronization by RDR is broken due to causes including a failure, resynchronize disks by following either of the procedures below:

[Resynchronization by specifying a disk]

Resynchronize the disk where a command is executed from the disk of the paired slot.

1. Start [RDR Utility] and right-click a target disk in the left frame and click [Resynchronize This Disk].
2. In the [Success] dialog box, click [OK].
3. The [Op State: State] of the disk becomes [Syncing] and resynchronization starts.

4. When [Op State: State] becomes [Duplex], the resynchronization is completed.

Verifying RDR disks

Follow the steps below to check if the disk synchronization by RDR is being performed normally.

TIPS:

- The verification process is automatically performed every 12 hours.
- The duration may vary depending on the disk size or load, but the verification process completes in a few seconds.

1. Start [RDR Utility] and right-click [RDR Virtual Disk x](x=1,2,3) in the left frame and click [Verify RDR Virtual Disk].
2. In the [Success] dialog box, click [OK].
3. Disk verification starts and [Status] of the RDR Virtual Disk becomes [Verify x percent](x=0,25,50,75).
4. When [Status] becomes [None], the verification is completed.

Setting priority for resynchronization

Priority of synchronization can be specified for disk mirroring by RDR.

By changing the priority, I/O load during synchronization can be reduced.

1. Start [RDR Utility], right-click [RDR Virtual Disk x](x=1,2,3) in left frame to change the priority and click [Set Resync Priority].
2. When a dialog box appears, select Low, Normal or High (a default is Normal) and click [OK].
3. In the [Success] dialog box, click [OK].

Replacing Failed Hard Disk Drives

Follow the procedure below to locate and replace the failed hard disk. The failed hard disk should be replaced with new device with the server powered-on.

How to Locate Failed Disks

1. From [Start], select [All Programs] - [RDR] and click [RDR Utility] to start [RDR Utility].
2. From the tree on the left frame of [RDR Utility], select each disk and check the values of [MTBF: Current] and [MtbfThresholdStatus] in the right frame.

TIP:
For RDR Utility, see “About RDR Utility” on page 3-16.

[Description of each MTBF value]

Property name	Description	Normal value*
MTBF: Current	Mean time between failures.	Unknown
MtbfThresholdStatus	The status of comparing the MTBF value with the threshold level (1200 seconds).	Normal

* The normal value denotes the value of when no error has occurred.

If either of the values is different from the normal value, the disk has an error.

Procedures to Replace Failed Disks

Models that do not support the RDR function

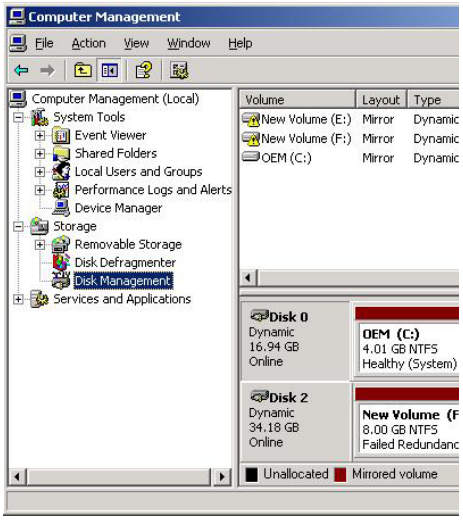
When a failure occurs on a disk mirrored by volume using [Disk Management], follow the steps below to replace the disk.

IMPORTANT:

- To remove a disk due to a failure, etc., compare [Disk Management] and [RDR Utility] to determine the disk to remove. (For RDR Utility, see “About RDR Utility” on page 3-16.)
- To reconfigure a mirror, be sure to confirm the TargetID in the disk’s [Properties] and use the disks with the same number. Do not mirror disks using the disk number shown in [Disk Management].
- When the disk to be inserted into a slot for duplexed configuration of disk has been used as a disk which contains the boot volume (disk storing the OS), the disk cannot be used for duplexed configuration. Initialize the disk to use the disk.

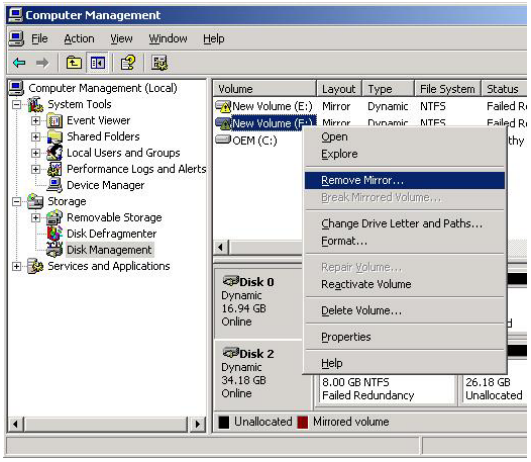
This section describes an example of determining failures of the disk in the Slot 2 of the PCI module for Group1 and the disk in the Slot 3 of the PCI module for Group2 using “How to Locate Failed Disks”.

1. Click [Start] → [Administrative Tools] → [Computer Management]. The [Computer Management] window appears.
2. Click [Disk Management] under [Storage] in the console tree. An example in this figure shows that one of the mirrored disks in which Drives E and F are included is broken. Some disks are indicated as “Unknown disk.” However, they may be indicated differently depending on the error type. Even in such cases, failed disks can be recovered by following the steps below:



3. Remove the hard disks from Slot#2 of Group 1 and Slot#3 of Group 2.

4. Right-click a volume that has “!”, and remove mirror.

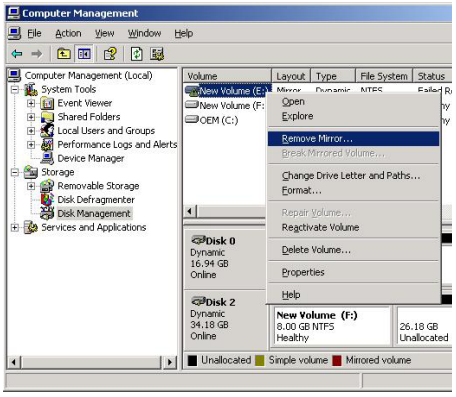


5. After checking to see the “Missing” disk is selected, click [Remove mirror]. At Drive (F), [Mirror] and [Failed Redundant] will change to [Simple] and [Healthy].

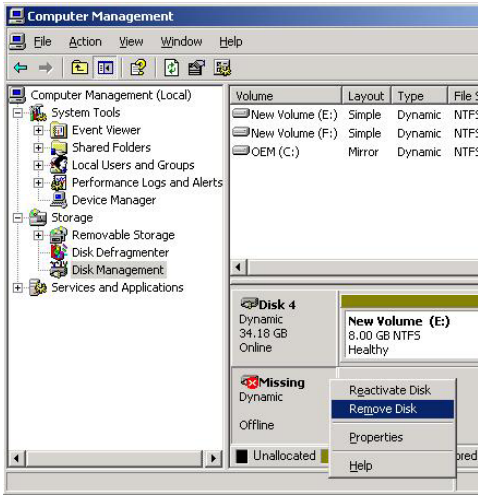
Remove Mirror
Removing a mirror from this volume removes one copy of the volume's data. The volume will no longer contain redundant data.
Select a disk from which to remove a mirror of F: (New Volume).
Disks:
Disk 2
Missing
Remove Mirror
Cancel

6. Right-click a disk with “x”, and select [Remove Disk].

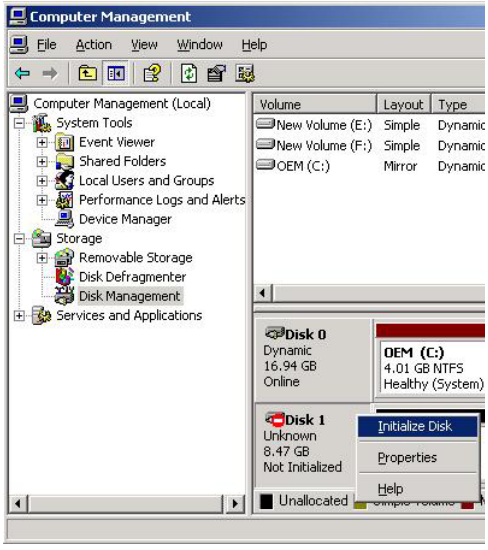
7. Similarly, delete the other [Missing] disk.



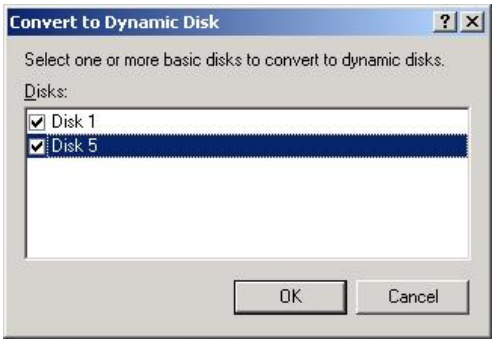
Remove Mirror
Removing a mirror from this volume removes one copy of the volume's data. The volume will no longer contain redundant data.
Select a disk from which to remove a mirror of E: (New Volume).
Disks:
Disk 4
Missing
Remove Mirror
Cancel

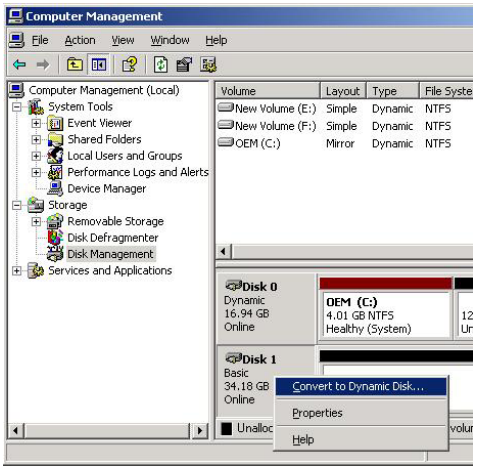


8. Insert new disks. They will appear on [Disk Management]. If any uninitialized disk is inserted, right-click the disk and initialize it.



9. Select and right-click a disk, and then select [Convert to Dynamic Disk].





IMPORTANT: If [Foreign] appears, execute [Convert to Dynamic Disk] after [Convert to Basic Disk] is executed.

10. Open the disk's properties to check the target IDs. In the following figures, disks are configured as:

Disk 1: Target ID 1

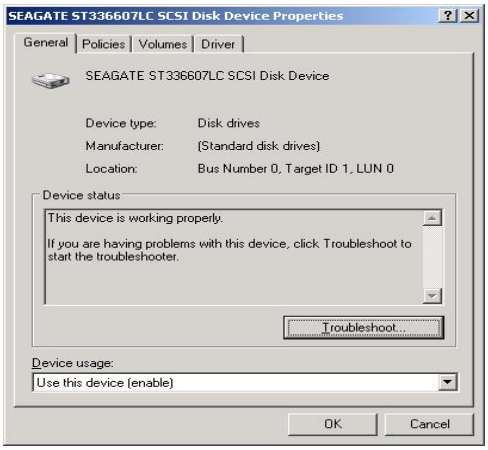
Disk 2: Target ID 2

Disk 4: Target ID 1

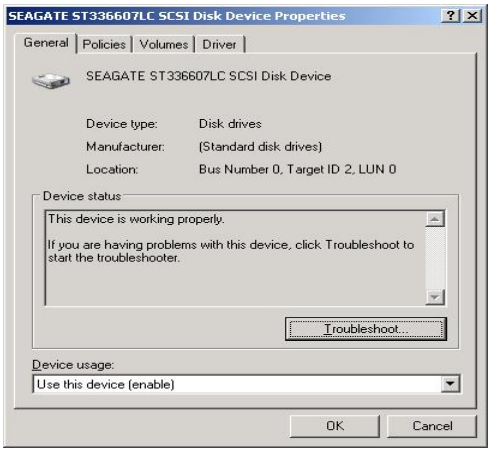
Disk 5: Target ID 2

Disks with the same target ID are mirrored.

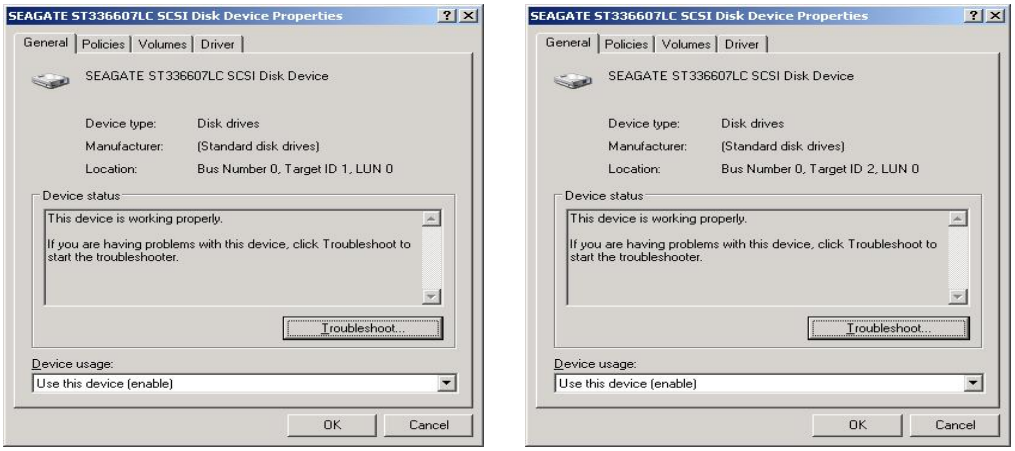
Disk 1


SEAGATE ST336607LC SCSI Disk Device Properties
General Policies Volumes Driver
SEAGATE ST336607LC SCSI Disk Device
Device type: Disk drives
Manufacturer: (Standard disk drives)
Location: Bus Number 0, Target ID 1, LUN 0
Device status
This device is working properly.
If you are having problems with this device, click Troubleshoot to start the troubleshooter.
Troubleshoot...
Device usage:
Use this device (enable)
OK
Cancel

Disk 2

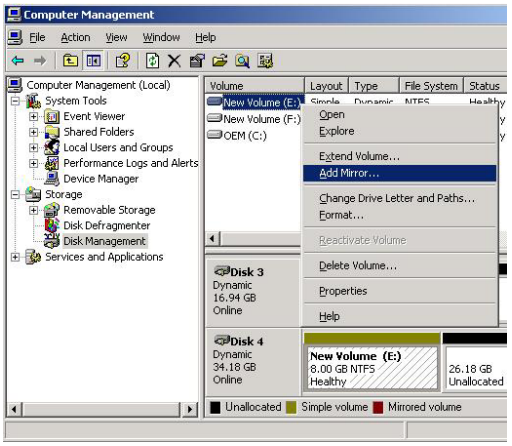

SEAGATE ST336607LC SCSI Disk Device Properties
General Policies Volumes Driver
SEAGATE ST336607LC SCSI Disk Device
Device type: Disk drives
Manufacturer: (Standard disk drives)
Location: Bus Number 0, Target ID 2, LUN 0
Device status
This device is working properly.
If you are having problems with this device, click Troubleshoot to start the troubleshooter.
Troubleshoot...
Device usage:
Use this device (enable)
OK
Cancel

Disk 4 Disk 5

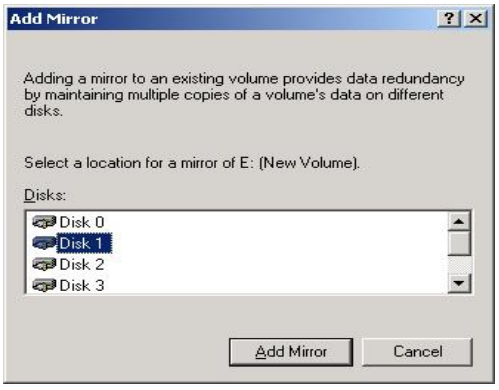


IMPORTANT: Hard disks are numbered from "0" at the OS startup according to the position they are inserted. When you increase a hard disk while the system is running, it will be given a number that is not used for any disks. However when you restart the system, the old disk numbers will not be retained and disks are re-numbered according to the hard disk position. Therefore, you need to determine which disks are mirrored based on target IDs, which are always fixed, but not on disk numbers because disk numbers may change.

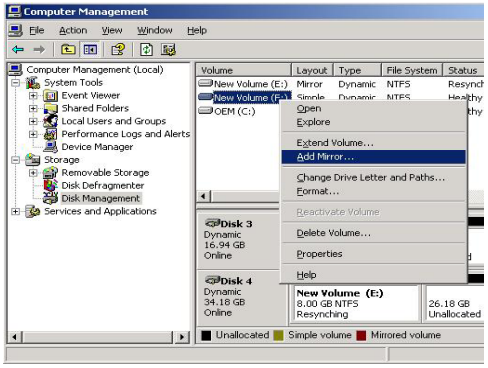
11. Make a mirror setting of Disks 1 and 4. Right-click volume (E) on the Disk 4 and select [Add Mirror].



12. When the [Add mirror] dialog box appears, select Disk 1, and then click [Add Mirror].


Add Mirror
Adding a mirror to an existing volume provides data redundancy by maintaining multiple copies of a volume's data on different disks.
Select a location for a mirror of E: (New Volume).
Disks:
Disk 0
Disk 1
Disk 2
Disk 3
Add Mirror
Cancel

13. Similarly, make settings of Disk 2 and Disk 5.
Upon completion of synchronous processing, recovery is completed.



Models supporting the RDR function

This section explains the procedure for replacing a disk, which is duplexed by the RDR function at disk level when a failure occurs to the disk.

IMPORTANT:

- The display of the RDR Utility is not updated automatically. Click [Action(A)] - [Refresh(R)] (or press **F5**) to update the display.

Notes for using the RDR function:

- Insert or replace the HDD while the server is powered on if the RDR function is used. If a new HDD (non-formatted HDD on Windows OS) is inserted to the slot corresponding to the slot with the disk you specified RDR when the server is powered off, the OS may not be able to start or the HDD mirroring may not be completed properly.

---

1. Click [Start]-[All Programs]-[RDR]-[RDR Utility], and start the RDR Utility.

2. Remove the failed HDD referring to “How to Locate Failed Disks” in this chapter.

IMPORTANT:

- Record the slot number to replace the HDD.

---

3. Insert a new HDD to the same slot.

IMPORTANT:

- The HDD to insert to the slot must be new or physically formatted and have the same capacity as the HDD inserted to the corresponding slot.
- Be sure to record the number of the slot where the new HDD is inserted.

---

4. The RDR setting will be automatically made to the inserted HDD. Confirm the Disk LED in the corresponding slot changes as shown below:

	Transition of the Disk LED
Replaced HDD	Green -> Amber -> Green
The HDD in the corresponding slot	Amber[1)] -> Green

1) If the HDD has no partition/volume, the LED remains illuminating green.

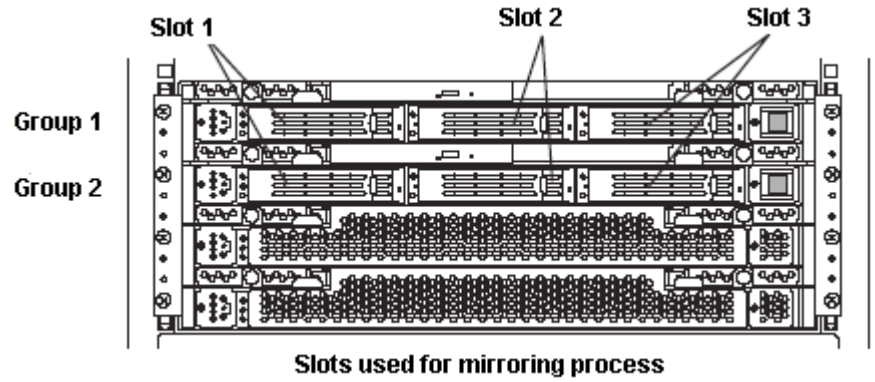
The [Op State: State] status of both HDDs shown in the RDR Utility changes to “Duplex”.

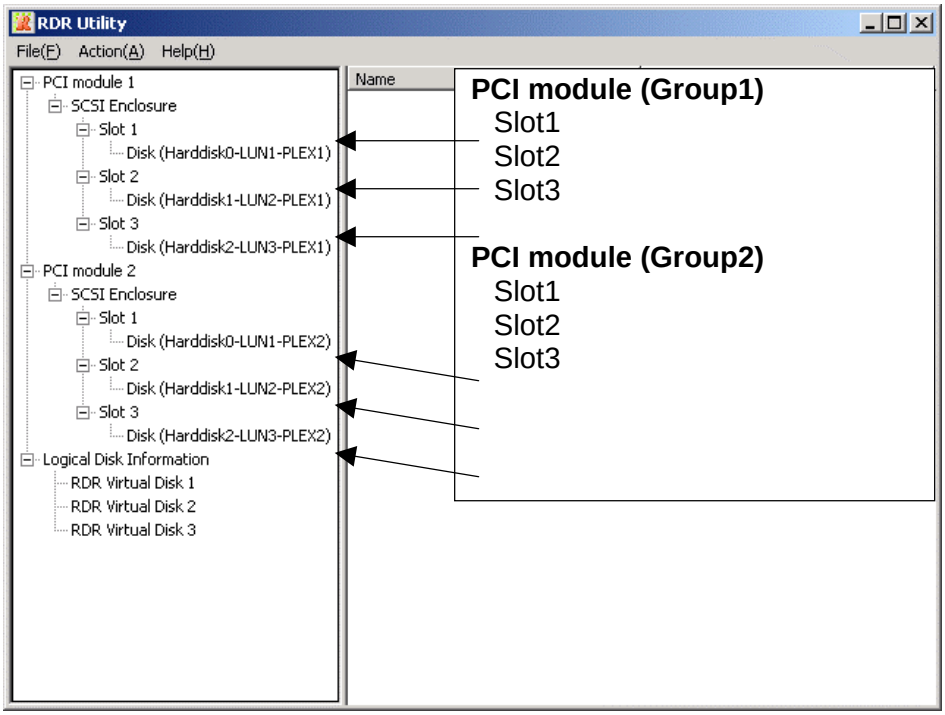
5. After the Disk LED of both HDDs are illuminated green and the [Op State: State] status changes to “Duplex”, right-click the HDD inserted in the step 3 in the RDR Utility, and execute the “Resynchronize This Disk” command.

IMPORTANT:

- Be sure to execute the command to the HDD inserted in step 3 because it may cause the loss of the data in the disk when you execute the command to the other disk.
- See the figure below regarding the correspondence between the slot and the RDR Utility.

<Correspondence between the HDD slot and the RDR Utility>





6. The mirroring between the HDDs in the corresponding slots will start. Confirm the Disk LED and the HDD status change as follows:

- The Disk LED of the HDD

	Transition of the Disk LED
Replaced HDD	Green -> Green
The HDD in the corresponding slot	Green -> Amber

- [Op State: State] and [Op State: Reason] of the HDDs and the RDR Virtual Disk viewed from the RDR Utility

	Op State: State	Op State: Reason
Replaced HDD	Syncing	None
The HDD in the corresponding slot	Simplex	None
RDR Virtual Disk	Simplex	None

7. The mirroring is completed when the Disk LED and the HDD status have changed to the following status:

- The Disk LED of the HDD

	Transition of the Disk LED
Replaced HDD	Green -> Green
The HDD in the corresponding slot	Amber -> Green

- [Op State: State] and [Op State: Reason] of the HDDs and the RDR Virtual Disk viewed from the RDR Utility

	Op State: State	Op State: Reason
Replaced HDD	Duplex	None
The HDD in the corresponding slot	Duplex	None
RDR Virtual Disk	Duplex	None

CHANGE DRIVE LETTER

To add, change or delete drive letters, follow the steps below. Before making any changes, thoroughly read the NEC Express5800/ft series-specific precautions and general precautions for Windows.

1. Select [Start] - [Control Panel] - [Administrative Tools] and open [Computer Management].
2. In the console tree of [Computer Management], click [Disk Management].
3. Right-click a target partition, logical drive or volume and click [Change Drive Letter and Paths…].
4. Perform one of the following:
   - To assign a drive letter, click [Add…], a drive letter to use, then [OK].
   - To change a drive letter, click the drive letter to change, [Change…], a drive letter to use, then [OK].
   - To delete a drive letter, click the drive letter to delete then [Remove].

IMPORTANT:

<NEC Express5800/ft series-specific precautions>
One CD-ROM drive for each PCI module (total of two CD-ROM drives) is installed in NEC Express5800/ft series. If those CD-ROM drives' N-codes are different, the drive letter assigned to the CD-ROM drive may be changed (reassigned) when the secondary PCI module becomes the primary module at startup. In such case, follow the instruction above to change back the drive letter. It is recommended to specify "D" as the CD-ROM drive's drive letter. (The change of drive letter due to the change of primary PCI module can be suppressed.)

<General precautions for Windows>
- Drive letter of system volume or boot volume cannot be changed.
- Up to 26 drive letters can be used on a computer. "A" and "B" are drive letters for floppy disk drives. Generally, hard disk drives are assigned "C" to "Z", but for network drives, drive letters are assigned in a reverse order ("Z" to "C").
- Because many of Windows programs refer to specific drive letters, cautions are required for assigning drive letters. For example, the Path environment variable specifies a program name and a specific drive letter.
- For performing the procedure above, you need to be a member of Backup Operators group or Administrators group, or you need to have appropriate authorization.

DUAL LAN CONFIGURATION

The NEC Express5800/ft series builds a dual LAN configuration by using "Stratus emb-82559 10/100 Enet Adapter" (100Base) and "Stratus emb-82544GC Copper Gigabit Adapter" (1000Base) mounted as standard on the PCI module.

Overview

The dual LAN configuration is of two types.

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the through put by operating packet transmission from the server by all the adapters. This feature includes AFT feature.

Configuring dual LAN

TIPS: To set dual LAN configuration, log on as "Administrator" or a member of the group "Administrators".

1. Display the [Intel(R)PROSet II] dialog box.
2. Start one of the start menu modes below:

   Standard start menu mode

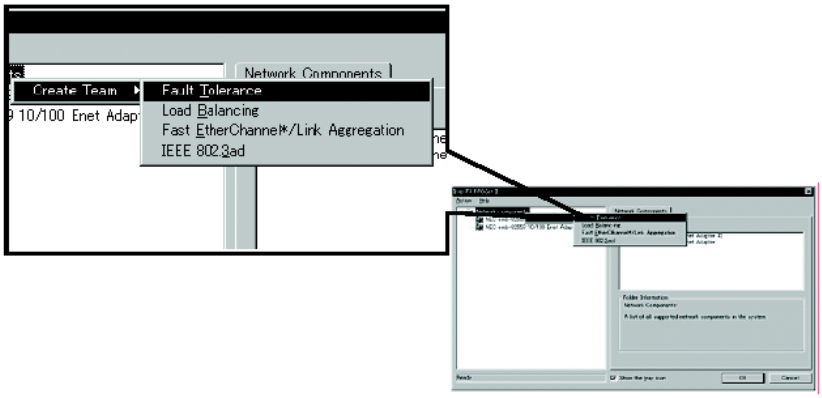
   Click [Intel(R)PROSet II] in [Control Panel] from the [Start] menu.

   Classic start menu mode

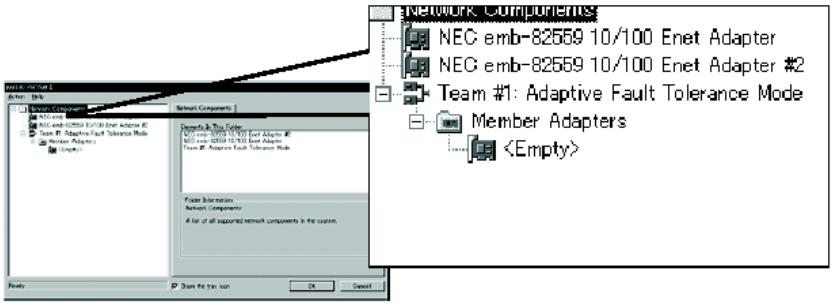
   (1) Select [Control Panel] from [Settings] of the [Start] menu.

   (2) Double-click the [Intel(R)PROSet II] icon.

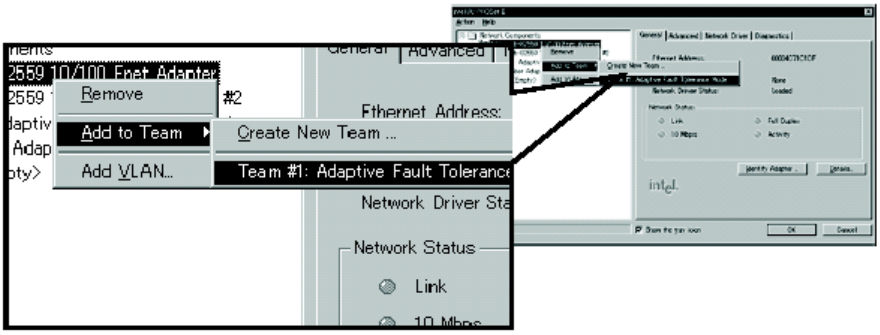
3. Select [Network Components] from Network Component Tree. The pop-up menu appears. Select [Fault Tolerance] from [Create Team].



[Team #1: Adaptive Fault Tolerance Mode] is added to Network Component Tree.


Network Components
NEC emb-82559 10/100 Enet Adapter
NEC emb-82559 10/100 Enet Adapter #2
Team #1: Adaptive Fault Tolerance Mode
Member Adapters
<Empty>

4. Select [Stratus emb-82559 10/100 Enet Adapter] from Network Component Tree. The pop-up menu appears. Select [Team #1: Adaptive Fault Tolerance Mode] from [Add to Team], and add the adapters.



You will see the warning message when you add the team. You can ignore this warning message by clicking [OK]. This warning message is to inform you that only one adapter is added to the team.

5. Select [Stratus emb-82559 10/100 Enet Adapter #2] from Network Component Tree in the same manner as for 4. The pop-up menu appears. Select [Team #1: Adaptive Fault Tolerance Mode] from [Add to Team], and add the adapters.

IMPORTANT: Do not set [Preferred Primary] or [Preferred Secondary] to each adapter.

---

6. Make settings of dual configuration for "Stratus emb-82544GC Copper Gigabit Adapter" (1000Base) as well.

Perform 3 to 5 in the same manner, replacing [Stratus emb-82559 10/100 Enet Adapter] with [Stratus emb-82544GC Copper Gigabit Adapter].

In 3, you can also select [Load Balancing]. In this case, [Team #X: Adaptive Load Balancing Mode] will be added.

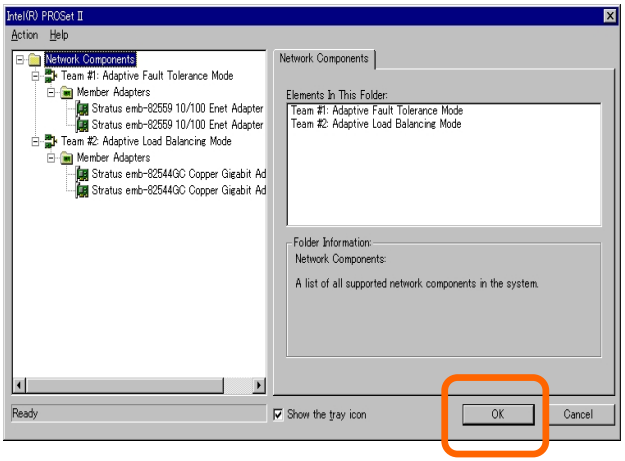
When the option boards are used, perform 3 to 5 in the same manner, replacing [Stratus emb-82559 10/100 Enet Adapter] with the following.

N8804-001P1: [Stratus AA-U51500 10/100 Enet Adapter]

N8104-84: [Stratus AA-U57000 Fiber Gigabit Adapter]

N8104-103: [NEC 8490XT Copper Gigabit Adapter]

7. Click [OK].
The [Intel(R)PROSet II] dialog box closes after a while, and the settings become effective.



IMPORTANT:

- The [Digital signature not found] dialog box may appear (several times). If it appears, click [Yes].
- After the settings of dual configuration, “Intel(R) Advanced Network Services Virtual Adapter” will appear on the [Network and dialup connection] or [Device Manager] dialog box. Therefore 6 adapters that consist of two "Virtual", two "100Base", and two "1000Base" adapters will appear on the [Network and dialup connection] or [Device Manager] dialog box. Do not “disable” the status of this “Virtual Adapter”. If you enable it again, the system may become unstable and you may need to restart it.
- Set IP address for "Virtual Adapter" after the settings of dual configuration. Do not set IP address for "100Base Adapter" or "1000Base Adapter".
- Use a hub for dual configuration. Use a repeater hub or a switching hub for AFT function. Use a switching hub for ALB function.
- Connect the network cables to the both primary and secondary PCI modules. After the settings of dual configuration, if one network cable is disconnected from a PCI module or a hub, the status of the PCI modules becomes simplex. In such case, if the network cable is connected to the PCI module or the hub again, the status of the PCI modules becomes duplex.

Removing dual LAN

TIPS: To set dual LAN configuration, log on as "Administrator" or a member of the group "Administrators".

1. Display the [Intel(R)PROSet II] dialog box.
2. Start one of the start menu modes below:

   Standard start menu mode

   Click [Intel(R)PROSet II] in [Control Panel] from the [Start] menu.

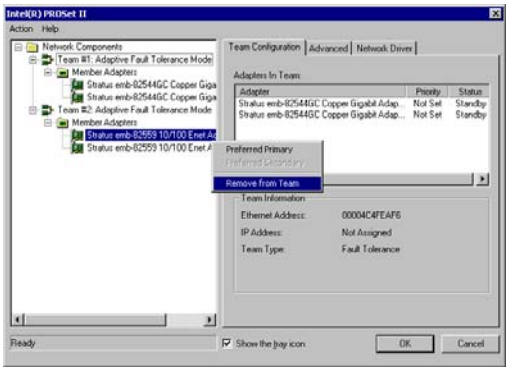
   Classic start menu mode

   (1) Select [Control Panel] from [Settings] of the [Start] menu.

   (2) Double-click the [Intel(R)PROSet II] icon.

3. Remove all adapters from Duplication.

   Right-click the following adapters on the control tree which is located on the left side of the [Intel(R)PROSet II] dialog box and select [Remove from Team].



<For on-board >

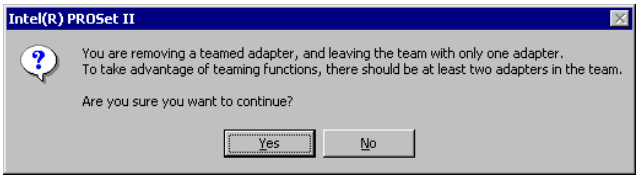
- Status emb-82559 10/100 Enet Adapter
- Status emb-82544GC Copper Gigabit Adapter

<For option board >

- Status AA-U51500 10/100 Enet Adapter (100BASE-TX)
- Status AA-U57000 Fiber Gigabit Adapter (1000 BASE-SX)
- NEC 8490 XT Copper Gigabit Adapter (1000 BASE-T)

You will then see the dialog box on the right of this paragraph. This is because one of two teamed adapters constituting dual configuration is removed.

Click [Yes], to remove the adapter from Team.


Intel(R) PROSet II
You are removing a teamed adapter, and leaving the team with only one adapter.
To take advantage of teaming functions, there should be at least two adapters in the team.
Are you sure you want to continue?
Yes
No

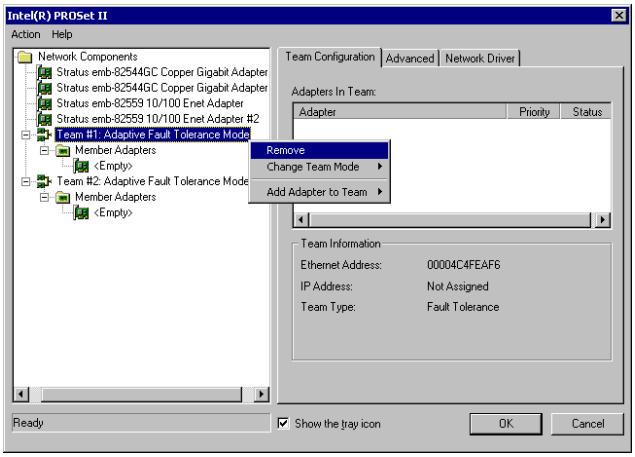
Remove the other adapter in the same way.

<For on-board >

- Status emb-82559 10/100 Enet Adapter
- Status emb-82544GC Copper Gigabit Adapter

<For option board >

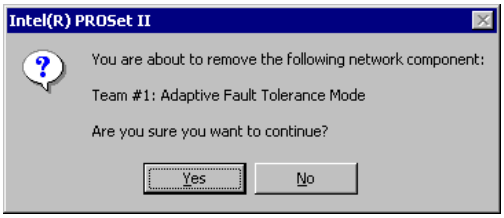
- Status AA-U51500 10/100 Enet Adapter (100BASE-TX)
- Status AA-U57000 Fiber Gigabit Adapter (1000 BASE-SX)
- NEC 8490 XT Copper Gigabit Adapter (1000 BASE-T)



4. Right click [Team #1:Adaptive Fault Tolerance Mode] and select [Remove].

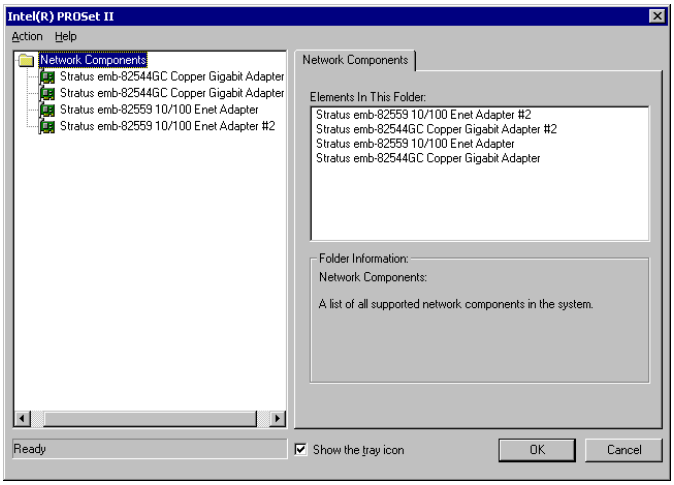
At that time, the dialog box shown on the right is displayed. This is a message for confirmation, so click [Yes] button.

Remove all teams displayed on the [Intel PRO Set II] dialog box in the same manner.


Intel(R) PROSet II
You are about to remove the following network component:
Team #1: Adaptive Fault Tolerance Mode
Are you sure you want to continue?
Yes
No

5. Click the [OK] button on the [Intel PROSet II] dialog box, close it, and make a setup effective.

The dual LAN will be canceled.



CHECK THE DUPLICATING OPERATION OF MODULES

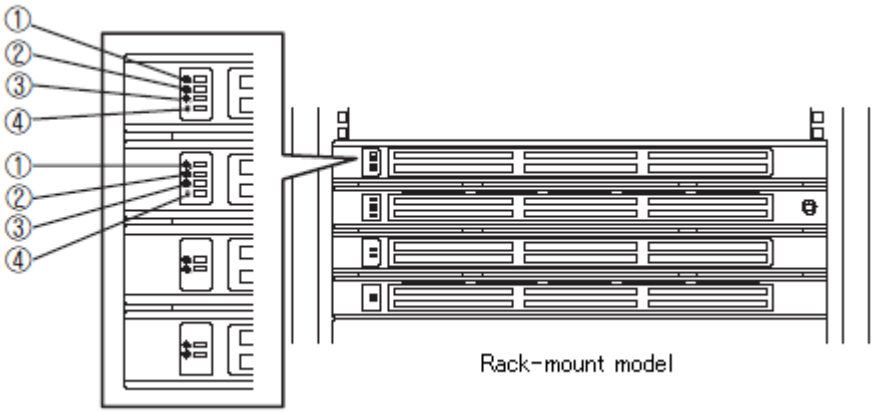
This section describes how to check if the system runs properly after system installation or reinstallation.

Evaluate Startup and Stop of PCI Modules

This section describes how to confirm the continuous system operation by failover after stopping the primary PCI module.

1. Check which is the primary PCI module.
The PCI module with the POWER switch illuminated is the primary module.

2. Check whether the PCI modules are duplicated.
To check if the PCI modules are duplicated, see the PCI modules' status LEDs.

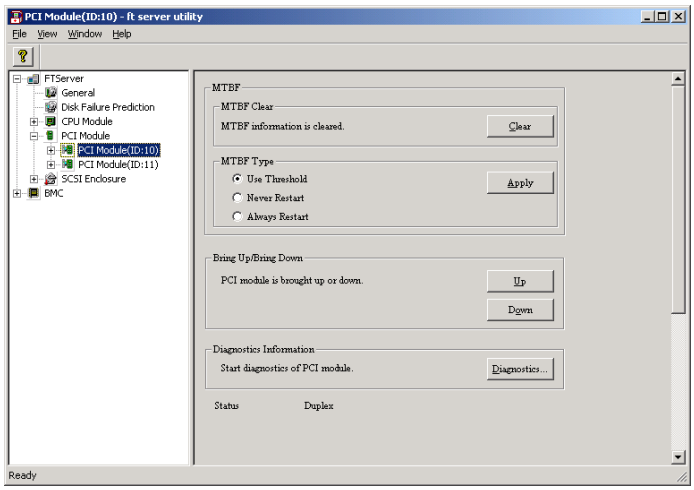


[Indications of the status LEDs when PCI modules are duplicated]

LED		Primary	Secondary
1	BMC status LED	Green	-
2	PCI module status LED1	-	-
3	PCI module status LED2	Green	Green
4	DISK ACCESS LED	Green or off	Green or off
DISK LED		Green	Green

* The numbers in the table correspond to the numbers in the above figure.
The DISK ACCESS LED (4) lights when the hard disk drive is accessed.

3. Stop the operation of a PCI module using the ft server utility.
Select [Start] - [All Programs] - [NEC ESMPRO Agent] - [ft server utility] to start the ft server utility.
Then, from the ft server utility, select [PCI Module] then the primary PCI module from the [FTSever] tree on the left pane, and click [Down] of [Bring Up/Bring Down]. When you stop the operation of the primary PCI module, a failover occurs and the secondary PCI module becomes the primary module.



The following events or changes occur when stopping the primary PCI module and the module fails over:

- The screen temporarily blacks out and then displayed again.
- The following message will appear from the taskbar:
  Windows - FT Orphaning: A disk that is part of a fault-tolerant volume can no longer be accessed.
  * The message denotes that the mirror volumes of the hard disk stored in the disconnected PCI module are released.
  * The message will not appear if disks are duplicated by the RDR function.
- Indications of PCI modules' status LEDs change as follows:
  [Indications of status LEDs]

LED		Secondary*	Primary*
1	BMC status LED	-	Green and blinking
2	PCI module status LED1	Red	-
3	PCI module status LED2	-	Amber
4	DISK ACCESS LED	-	Amber
DISK LED		-	Amber

* The primary and secondary modules after failover

4. Restart the PCI module.
From the ft server utility, click [Up] of [Bring Up/Bring Down] to the PCI module which was stopped in the step 3, and the PCI module will be started. Once the PCI module is started, PCI module diagnosis, mirror volume duplication and PCI module duplication are performed.

IMPORTANT: If BrightStor ARCserve 2000 or Backup Exec is installed, the tape will not be recognized due to the failover of the PCI module. Thus be sure to stop the services before starting the PCI module.

1. Start [Services] from [Administrative Tools] of [Control Panel].
2. Select a service of backup software.
3. Choose “Stop” from the “Action” menu.
4. Repeat 2 and 3 for all services of the backup software.

The PCI modules’ status LEDs changes as shown below:

[Indications of the status LEDs]

Immediately after the PCI module startup until the completion of diagnosis

LED		Secondary	Primary
1	BMC status LED	-	Green
2	PCI module status LED1	Red	-
3	PCI module status LED2	Green	Amber
4	DISK ACCESS LED	-	Amber
DISK LED		Green	Amber

When duplication of disks is started after the completion of PCI module diagnosis

* The status of LEDs differ depending on the method of disk duplication.

LED		Secondary		Primary
		Non-RDR model	RDR model	
1	BMC status LED	-	-	Green
2	PCI module status LED1	-	-	-
3	PCI module status LED2	Amber	Green	Amber
4	DISK ACCESS LED	Amber	Green	Amber
DISK LED		Amber	Green	Amber

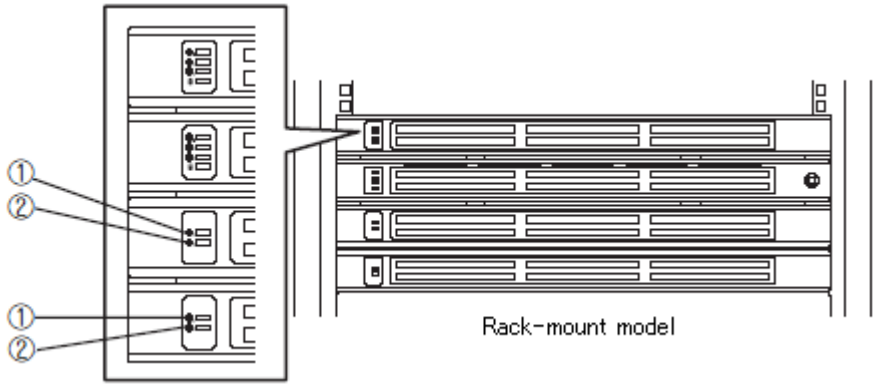
After the completion of disk duplication and when the PCI modules are duplicated

LED		Secondary	Primary
1	BMC status LED	-	Green
2	PCI module status LED1	-	-
3	PCI module status LED2	Green	Green
4	DISK ACCESS LED	Green or off	Green or off
DISK LED		Green	Green

Evaluate Start and Stop of CPU Modules

This section describes how to confirm the continuous system operation after stopping one of the CPU modules.

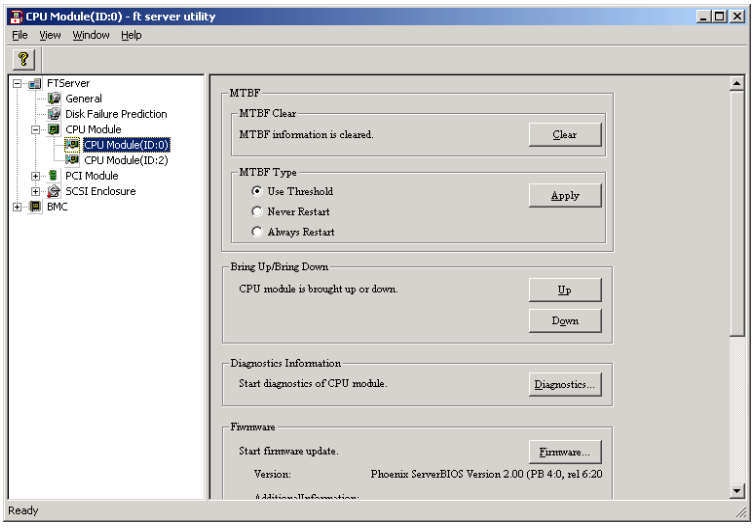
1. Confirm that the CPU modules are duplicated.
To check if the CPU modules are duplicated, see the status LEDs of the CPU modules.



[Indications status LEDs when CPU modules are duplicated]

LED		CPU module#1 (Operating)	CPU module#2 (Operating)
1	CPU module status LED1	-	-
2	CPU module status LED2	Green	Green

2. Use the ft server utility to stop the operation of a CPU module to remove.
From [Start], select [All Programs], [NEC ESMPRO Agent] then [ft server utility] to start the ft server utility. Then, from the ft server utility, select [CPU Module] then the CPU module to stop from the [FTSever] tree on the left pane, and click [Down] of [Bring Up/Bring Down].



When you stop the operation of a CPU module, the indications of the status LEDs change as follows. Below denotes that the only one CPU module is operating.

[Indications of status LEDs]

LED		CPU module#1 (Stopped)*	CPU module#2 (Operating)
1	CPU module status LED1	Red	-
2	CPU module status LED2	-	Amber

* As an example, the indications of when CPU module#1 is stopped are shown.

3. Press the start button of the CPU module stopped by ft server utility.
In the ft server utility, select the stopped CPU module and click [Up] of [Bring Up/Bring Down].
Once the CPU module is started, hardware diagnosis and then synchronization of memory (memory copy) are performed, and the duplication process is completed.
Note that the system is paused temporarily for copying memory during memory synchronization.

[Indications of status LEDs during diagnosis]

LED		CPU module#1 (Started)	CPU module#2 (Operating)
1	CPU module status LED1	Red	-
2	CPU module status LED2	Green	Amber

[Indications of status LEDs after completion of duplication]

LED		CPU module#1 (Operating)	CPU module#2 (Operating)
1	CPU module status LED1	-	-
2	CPU module status LED2	Green	Green

IMPORTANT:

After duplication is completed, the status of memory will be checked.

Wait until this process ends to perform the next step (evaluation of start and stop of PCI and CPU modules). When the process is complete, the following event log will be output:

Source: srabid

Type: Information

Event ID: 4137

Description: Memory consistency check has completed memory scan.

NEC Express5800/ft series SERVICE PROGRAM CONFIGURATION

NEC Express5800/ft series achieves the duplex system using the following service programs, in addition to dedicated drivers.

Service program names shown in [Services]:
- Stratus ftServer Maintenance and Diagnostics (MAD)
- Stratus ftServer Provider Manager
- Stratus ftServer Storage Manager
- BMC FW Update Service
- Windows Management Instrumentation
- SNMP Service
- Alert Manager Main Service
- ESM System Management Service
- ESMFSService
- ESMCommonService
- ESRAS Utility Service
- ESMPS

The above programs are necessary for the NEC Express5800/ft series operation. Do not stop these services.

When minimizing the number of operating service programs temporarily is required (for system disk backup using backup software, etc), the following service programs may be stopped:

Services that can be stopped:
- ESMFSService
- ESRAS Utility Service

Services required to keep operating
- Stratus ftServer Maintenance and Diagnostics (MAD)
- Stratus ftServer Provider Manager
- Stratus ftServer Storage Manager
- BMC FW Update Service
- Windows Management Instrumentation
- SNMP Service
- Alert Manager Main Service
- ESM System Management Service
- ESMCommonService
- ESMPS
- Virtual Disk Service (when using Windows' Disk Management)

Make sure to restart the operations of stopped service programs immediately after the backup processes are completed.

Chapter 4

System Configuration

This chapter describes Basic Input Output System (BIOS) configuration.

When you install the server for the first time or install/remove optional devices, thoroughly read this chapter for better understanding and correct setups.

SYSTEM BIOS ~ SETUP ~

The SETUP utility is provided to make basic hardware configuration for the server. This utility is pre-installed in the flash memory of the server and ready to run.

The server is configured with the correct parameters using the SETUP utility and shipped in the best conditions. Thus, you don't need to use the SETUP utility in most cases. However, you might wish to use the SETUP utility in the cases described below.

IMPORTANT:

- The SETUP utility is intended for system Administrator use only.
- The SETUP utility allows you to set a password. The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters of the SETUP utility. With the User password, system parameters available for viewing and changing are limited.
- Do not set any password before installing the OS.
- The server contains the latest version of the SETUP utility. Dialog boxes appearing on your SETUP utility, thus, may differ from descriptions in this User's Guide. If you find anything unclear, see the online help or ask your sales agent.

Starting SETUP Utility

Powering on the server starts POST (Power On Self-Test) and displays its check results. If the NEC logo is displayed, press **Esc**.

After a few seconds, either of the following messages appears at bottom left on the screen depending on your system configuration.

```
Press <F2> to enter SETUP
```

```
Press <F2> to enter SETUP, Press <F12> to Network
```

You may see either of the following messages at bottom left on the screen when POST terminates.

```
Press <F1> to resume, <F2> to SETUP
```

```
Press <F1> to resume, <F2> SETUP, <F12> Network
```

Press **F2** to start the SETUP utility and display its Main menu.

If you have previously set a password with the SETUP utility, the password entry screen appears. Enter the password.

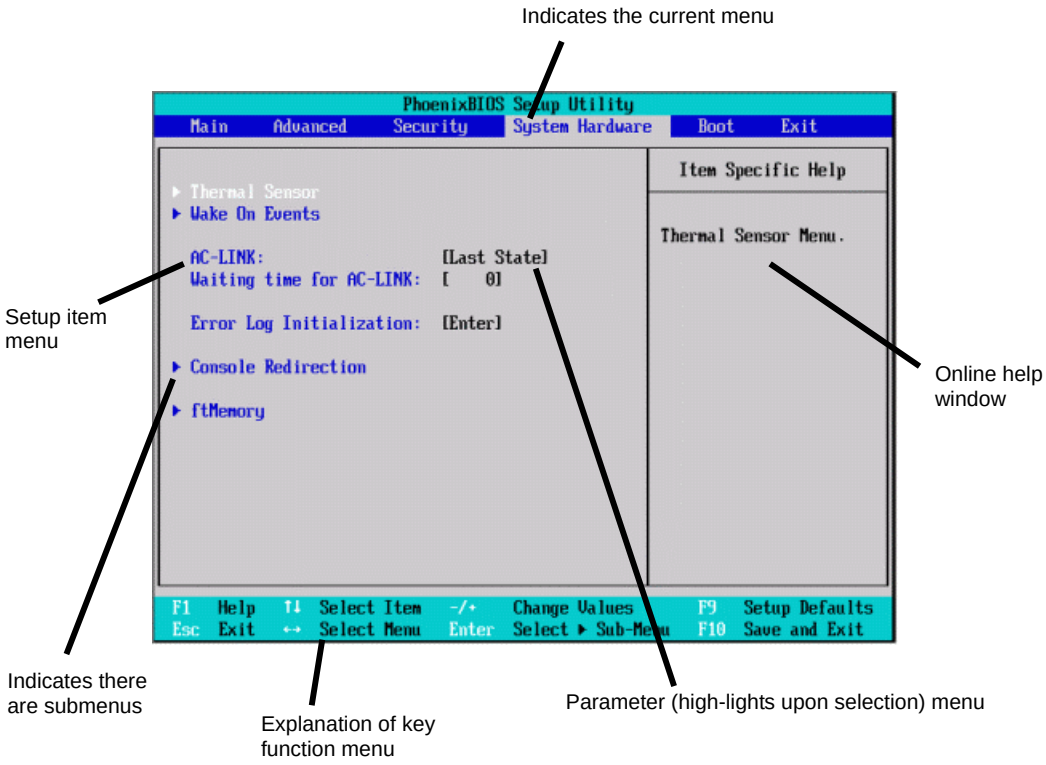
```
Enter password:[                ]
```

Up to three password entries will be accepted. If you fail to enter the password correctly for three consecutive times, the server halts. (You can no longer proceed.) Power off the server.

TIPS: The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system configurations. With the User password, the system configurations you can view or change are limited.

Description of On-Screen Items and Key Usage

Use the following keyboard keys to work with the SETUP utility. (Key functions are also listed at the bottom of the screen.)


Indicates the current menu
PhoenixBIOS Setup Utility
Main Advanced Security System Hardware Boot Exit
Item Specific Help
Thermal Sensor
Wake On Events
Thermal Sensor Menu.
AC-LINK: [Last State]
Waiting time for AC-LINK: [0]
Error Log Initialization: [Enter]
Console Redirection
ftMemory
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit
Setup item menu
Online help window
Indicates there are submenus
Explanation of key function menu
Parameter (high-lights upon selection) menu

Cursor (↑, ↓):	Selects an item on the screen. The highlighted item is currently selected.
Cursor (←, →):	Selects the Main, Advanced, Security, System Hardware, Boot, or Exit menu.
– and **+**:	Changes the value (parameter) of the selected item. When a submenu option (an option preceded by "▶") is selected, these keys are disabled.
Enter	Press **Enter** to choose the selected parameter.
Esc	Displays the previous screen.
F1:	Press **F1** when you need help on SETUP operations. The help screen for SETUP operations appears. Press **Esc** to return to the previous screen.
F9:	Sets the default parameter to the parameter of the currently displayed item. (The default parameter may differ from the factory setting.
F10:	Save configuration values and exit.

Configuration Examples

The following describes examples of configuration required to use software-link features or for system operations.

Link with Management Software

To control power supply of the server with NEC ESMPRO Manager via the network

Select [System Hardware] → [AC-LINK] → [StayOff].

To use the management PC with "NEC MWA" installed for remote operations

- Remote operation via LAN

  Select [Advanced] → [Advanced] → [RomPilot Support] → [Enabled].

- Remote operation via direct connection using cross cable

  Select [System Hardware] → [Console Redirection] → [Console Connection] → [Direct].

- Remote operation via WAN

  Select [System Hardware] → [Console Redirection] → [Console Connection] → [Via Modem].

UPS

To link power supply with the UPS

- To power on the server when power is supplied from the UPS

  Select [System Hardware] → [AC-LINK] → [Power On].

- To keep the server off-powered even when power is supplied from the UPS if the POWER switch was used to power off

  Select [System Hardware] → [AC-LINK] → [Last State].

- To keep the server off-powered even when power is supplied from the UPS

  Select [System Hardware] → [AC-LINK] → [StayOff].

Keyboard

To set NumLock and key repeat

Select [Advanced] → [Keyboard Features] and set each item.

Security

To set passwords on the BIOS level

Select [Security] → [Set Supervisor Password] and enter a password.

Set Supervisor password first, then User password.

To enable/disable the POWER switch

Select [Security] → [Power Switch Mask] → [Unmasked].

Select [Security] → [Power Switch Mask] → [Masked].

IMPORTANT: Masking the POWER switch disables forced shutdown as well as power on/off using the POWER switch.

Serial Devices

To setup serial devices

Select [Advanced] → [Peripheral Configuration] and setup each device.

Optional PCI–related devices

To install optional SCSI boards, etc.,

Select [Advanced] → [Option ROM] → [PCI Slot n] → [Enabled]

n: Slot number to install the board

Boot

To change the boot order of devices connected to the server

Select [Boot] and specify the boot order.

To display POST check results

Select [Advanced] → [Advanced] → [Boot-time Diagnostic Screen] → [Enabled].

You can also press **Esc** while the NEC log is on the screen to display POST check results.

To control from the HW console

- Remote operation via LAN

  Select [Advanced] → [Advanced] → [RomPilot Support] → [Enabled].

- Remote operation via WAN

  Select [System Hardware] → [Console Redirection] and set each item.

Memory

To check the installed memory (DIMM) status

Select [Advanced] → [Memory Information] and check the status indications.

Saving the Configuration Data

To save the BIOS configuration data

Select [Exit] → [Save Changes & Exit] or [Save Changes].

To discard changes to the BIOS configuration data

Select [Exit] → [Exit Without Saving Changes] or [Load Previous Value].

To restore the default BIOS configuration (it may be different from the configuration at shipment)

Select [Exit] → [Get Default Values].

Menu and Parameter Descriptions

The SETUP utility has the following six major menus:

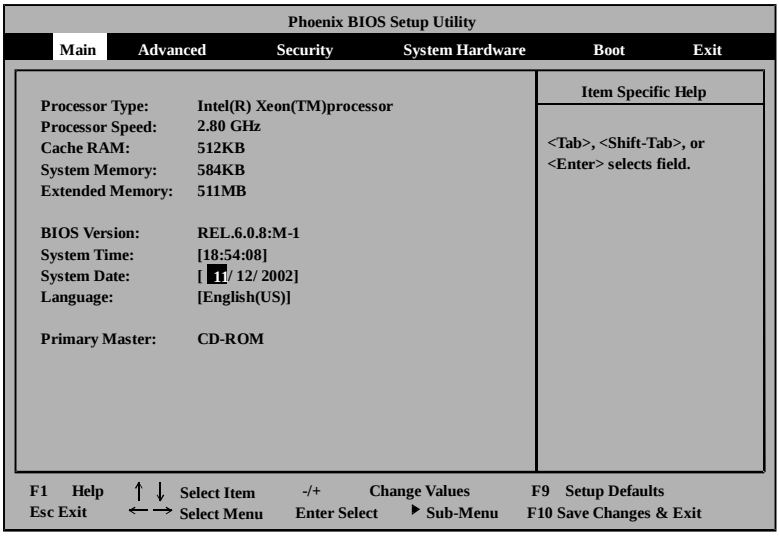
- Main
- Advanced
- Security
- System Hardware
- Boot
- Exit

To configure detailed settings of functions, select a submenu from the above menus. Below describes configurable functions and parameters and the factory settings displayed in the screen for each menu.

Main

Start the SETUP utility to display the Main menu.

<Example>



Available options in the Main and descriptions are listed below.

Option	Parameter	Description	Your Setting
Processor Type	Intel®Xeon™Processor	Indicates the type of the installed CPU (view only).	
Processor Speed	2.80GHz	Indicates the clock speed of the installed CPU (view only).	
Cache RAM	512KB	Indicates the cache RAM size (view only).	
System Memory	584KB	Indicates the total size of the basic memory (view only).	
Extended Memory	(Extended memory size)	Indicates the total size of the extended memory (view only).	
BIOS Version	(Version of BIOS)	Indicates the version of the system BIOS (view only).	
System Time	HH:MM:SS	Specify the current time.	
System Date	MM/DD/YYYY	Specify the current date.	
Language	[English (US)] Français Deutsch Italiano Español	Select a language in which the SETUP is displayed. Only English (US) is supported currently.	
Primary Master	CD-ROM	Indicates device type connected to IDE (Primary master). (View only)	

[ ]: Factory-set

IMPORTANT: Check and adjust the system clock before operation in the following conditions.

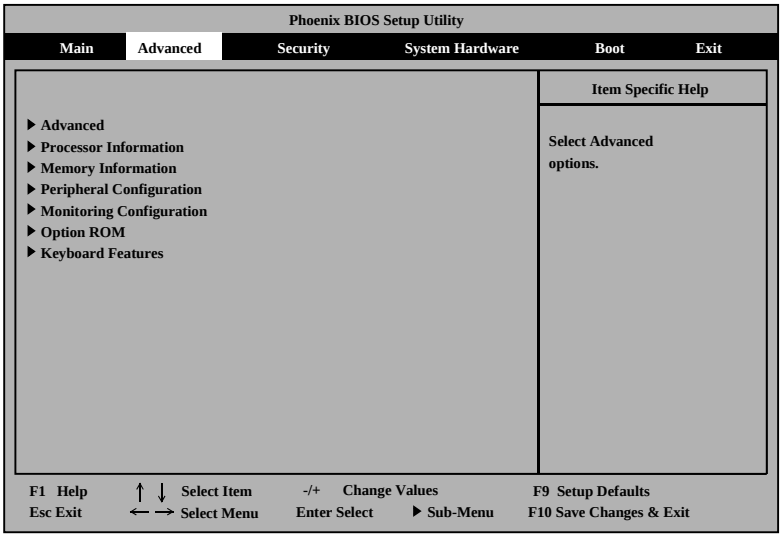
- After transporting the equipment
- After storing the equipment
- After the equipment halt under the conditions which is out of the guranteed environment conditions (Temperature: 10 to 35°C, Humidity: 20 to 80%).

Check the system clock once in a month. It is recommended to operate the system clock using a time server (NTP server) if it is installed on the system which requires high level of time accuracy. If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.

Advanced

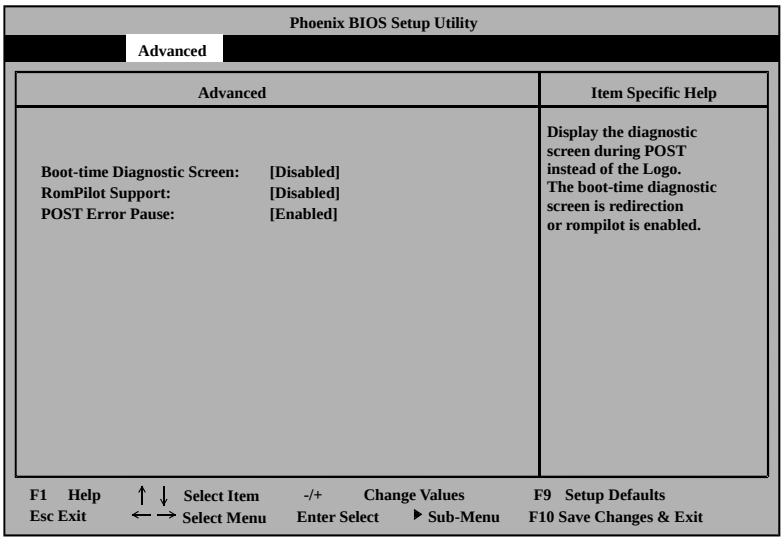
Move the cursor onto "Advanced" to display the Advanced menu.

There is no configurable item on the Advanced menu screen below. Display each sub menu and make settings on the sub menu screen. Select an option with the "▶" mark and press **Enter** to display its submenu.



Advanced

Select "Advanced" on the Advanced menu to display the following screen.


Phoenix BIOS Setup Utility
Advanced
Advanced
Item Specific Help
Boot-time Diagnostic Screen: [Disabled]
RomPilot Support: [Disabled]
POST Error Pause: [Enabled]
Display the diagnostic screen during POST instead of the Logo. The boot-time diagnostic screen is redirection or rompilot is enabled.
F1 Help ↑ ↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← → Select Menu Enter Select ▶ Sub-Menu F10 Save Changes & Exit

See the table below for setup options on the screen.

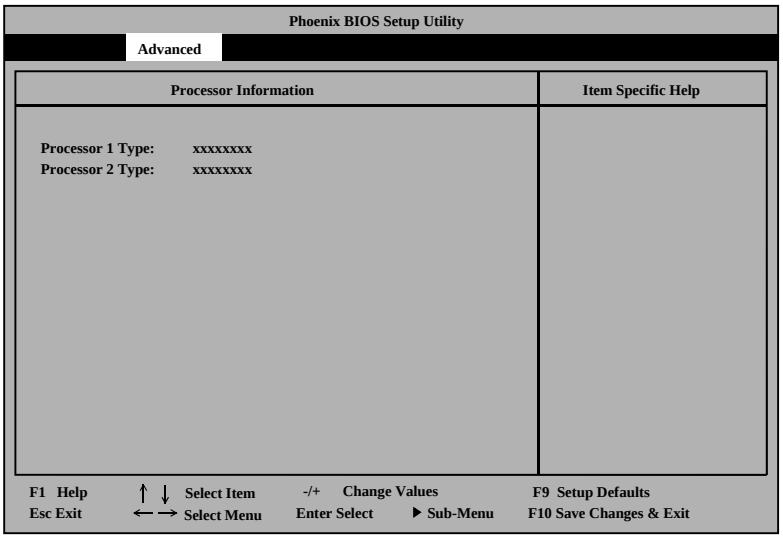
Option	Parameter	Description	Your Setting
Boot-time Diagnostic Screen	[Disabled] Enabled	Specify whether to display the Power On Self-Test (POST) screen at start-up. If "Disabled" is selected, the NEC logo appears while POST is in progress. (To display POST check results, press **Esc**.) If "RomPilot Support" is set to "Enabled" or "Console Redirection" is set, this option is unconditionally set to "Enabled".	
RomPilot Support	[Disabled] Enabled	Enable or disable the RomPilot (the remote console and remote drive features during OS start-up). If this option is set to "Enabled", "Boot-time Diagnostic Screen" is unconditionally set to "Enabled".	
Post Error Pause	[Enabled] Disabled	Specify whether to stop POST at the end of POST when an error occurs during POST.	

[ ]: Factory-set

TIPS: "RomPilot" is a BIOS feature for communications with the NEC Management Workstation Application (NEC MWA). To use the NEC MWA for management of the server, select "Enabled" for "RomPilot Support." Use of the RomPilot features requires setups for the NEC MWA.

Processor Information

Select "Processor Information" on the Advanced menu to display the following screen.



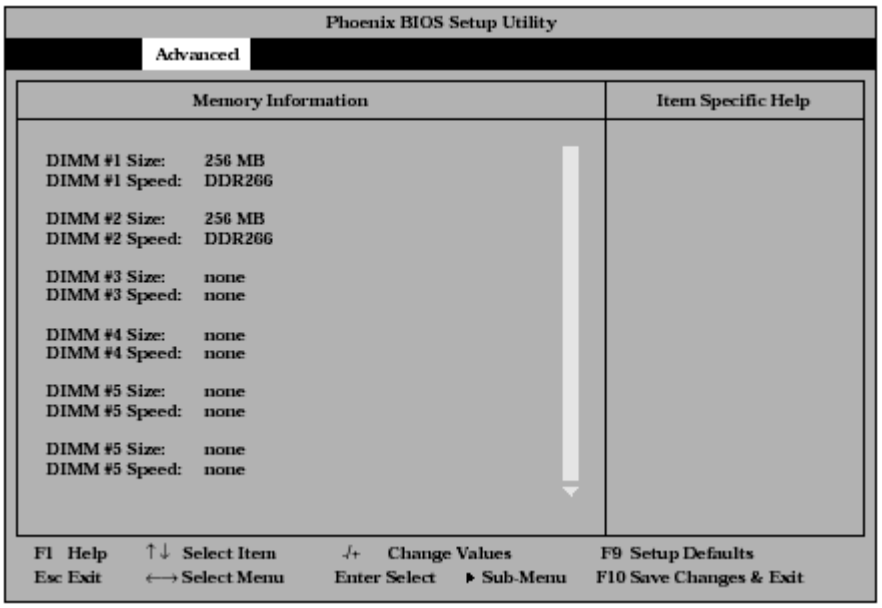
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Processor 1 Type Processor 2 Type	–	Indicates processor type installed on Processor 1 or Processor 2 (view only).	

[ ]: Factory-set

Memory Information

Select "Memory Information" on the Advanced menu to display the following screen.


Phoenix BIOS Setup Utility
Advanced
Memory Information
Item Specific Help
DIMM #1 Size: 256 MB
DIMM #1 Speed: DDR266
DIMM #2 Size: 256 MB
DIMM #2 Speed: DDR266
DIMM #3 Size: none
DIMM #3 Speed: none
DIMM #4 Size: none
DIMM #4 Speed: none
DIMM #5 Size: none
DIMM #5 Speed: none
DIMM #5 Size: none
DIMM #5 Speed: none
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▸ Sub-Menu F10 Save Changes & Exit

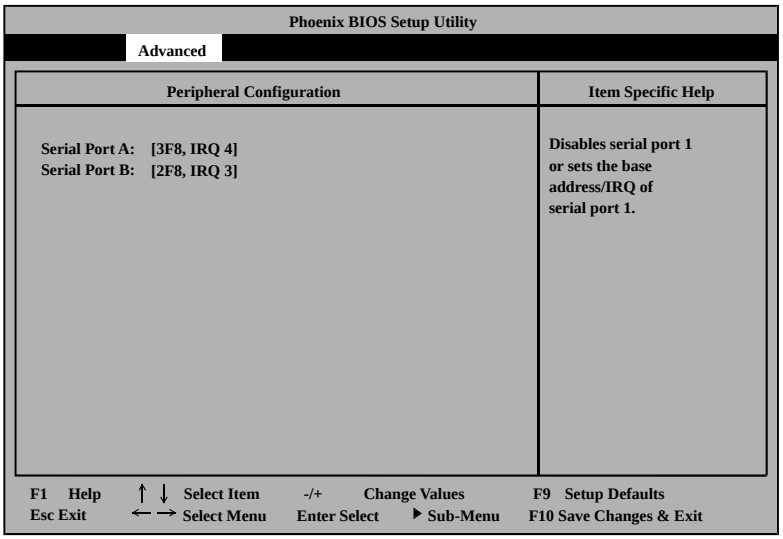
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
DIMM #1- #6 Size	–	Indicates the size of memory installed on DIMMs 1 (#1) to 6 (#6). "None" indicates no DIMM installed (view only).	
DIMM #1- #6 Speed	–	Indicates the type of DIMM (DDR200/DDR266) installed on DIMMs 1 (#0) to 6 (#6). "None" indicates no DIMM installed (view only).	

[ ]: Factory-set

Peripheral Configuration

Select "Peripheral Configuration" on the Advanced menu to display the following screen.



See the table below for setup options on the screen.

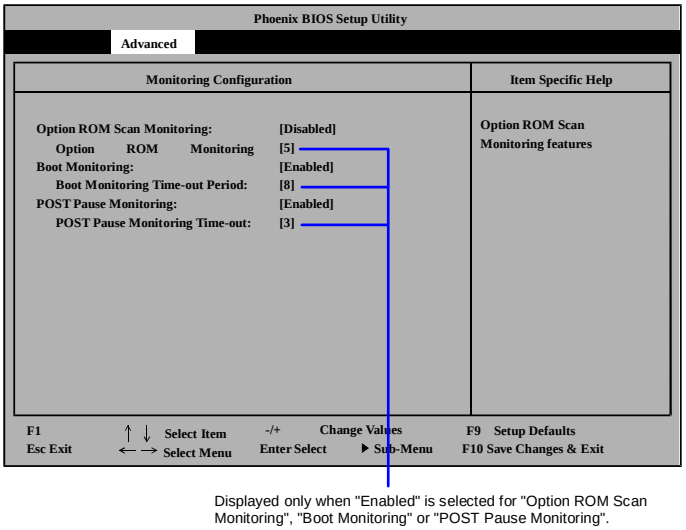
IMPORTANT: Make sure to avoid any conflict in the interrupt requests or the base I/O addresses.

Option	Parameter	Description	Your Setting
Serial Port A Serial Port B	Disabled 3F8, IRQ 3 [3F8, IRQ 4]*1 [2F8, IRQ 3]*2 2F8, IRQ 4 3E8, IRQ 3 3E8, IRQ 4 2E8, IRQ 3 2E8, IRQ4 Auto	Enable or disable the serial port A and B, or specify a base address and interrupt. *1 Factory setting for the serial port A *2 Factory setting for the serial port B	

[ ]: Factory-set

Monitoring Configuration

Select "Monitoring Configuration" on the Advanced menu to display the following screen.


Phoenix BIOS Setup Utility
Advanced
Monitoring Configuration
Item Specific Help
Option ROM Scan Monitoring: [Disabled]
Option ROM Monitoring [5]
Boot Monitoring: [Enabled]
Boot Monitoring Time-out Period: [8]
POST Pause Monitoring: [Enabled]
POST Pause Monitoring Time-out: [3]
Option ROM Scan Monitoring features
F1 Select Item -/+ Change Values F9 Setup Defaults
Esc Exit Select Menu Enter Select Sub-Menu F10 Save Changes & Exit
Displayed only when "Enabled" is selected for "Option ROM Scan Monitoring", "Boot Monitoring" or "POST Pause Monitoring".

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Option ROM Scan Monitoring	Disabled [Enabled]	Enable or disable the Option ROM scan monitoring feature.	
Option ROM Monitoring Time-out	1 - [5] - 20	Specify the Option ROM monitoring time-out period. This option is displayed only when "Enabled" is selected for "Option ROM Scan Monitoring".	
Boot Monitoring	Disabled [Enabled]	Enable or disable the boot monitoring feature. This function is unique to NEC Express5800/ft series: detects errors until the OS boots up, and immediately reboots the OS upon detection of an error. (For details, see “Behavior at Occurrence of Error” in Chapter 2.) Enable this function if NEC ESMPRO Agent is installed on the OS. Disable this function if NEC ESMPRO Agent is not installed or when you install the OS. Otherwise, the OS will boot up after “Specified boot timeout.”	
Boot Monitoring Time-out Period	1 - [10] - 20	Specify the boot monitoring time-out period. This option is displayed only when "Enabled" is selected for "Boot Monitoring". If you specify a shorter period of time to “Boot Monitoring Time-out Period”, the time until rebooting can be reduced. When there is no external device connected, it is possible to set a shorter period of time, but 3 minutes or longer is recommended. Appropriate value for the setting varies depending on your environment. Therefore, when changing this setting, evaluate it thoroughly after constructing the environment.	
POST Pause Monitoring	Disabled [Enabled]	Enable or disable the POST monitoring feature during boot-up restriction.	

Option	Parameter	Description	Your Setting
POST Pause Monitoring Time-out	1 - [3] - 20	Specify the POST monitoring time period during boot-up restriction.	

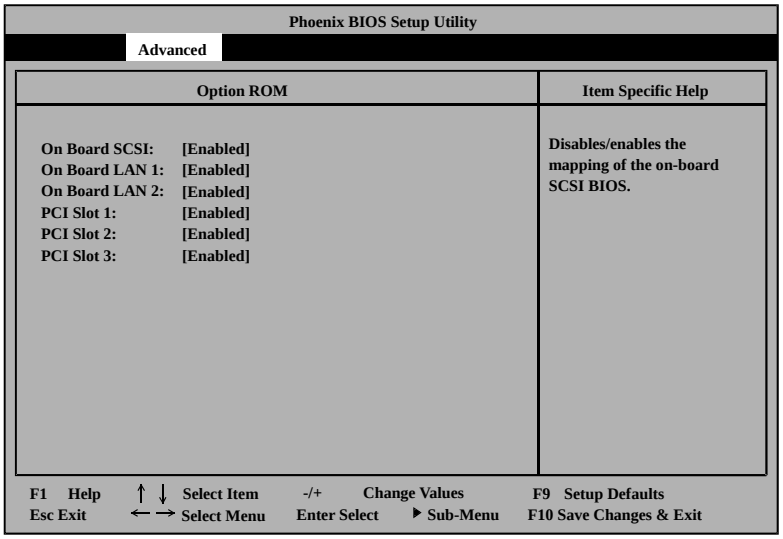
[ ]: Factory-set

IMPORTANT:

- When connecting a Fibre Channel disk array device, change the set value of "Boot Monitoring Time-out Period" depending on the wait time for the completion of the Fibre Channel disk array device initialization.
  Ex.: If the wait time for the completion of the Fibre Channel disk array device initialization is 4 minutes, change the value of "Boot Monitoring Time-out Period" from 10 (default) to 14 minutes.
- If you set a small value for "Boot Monitoring Time-out Period", you can shorten the waiting time to the rebooting. It is recommended to set a value of more than 3 minutes though smaller value setting is available when external devices are not used. As it depends on the user's setting environment, make sure to execute enough evaluation after the configuration of the environment.

Option ROM

Select "Option ROM" on the Advanced menu to display the following screen and enable/disable expansion of Option Rom BIOS on the PCI bus.


Phoenix BIOS Setup Utility
Advanced
Option ROM
Item Specific Help
On Board SCSI: [Enabled]
On Board LAN 1: [Enabled]
On Board LAN 2: [Enabled]
PCI Slot 1: [Enabled]
PCI Slot 2: [Enabled]
PCI Slot 3: [Enabled]
Disables/enables the mapping of the on-board SCSI BIOS.
F1 Help ↑ ↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← → Select Menu Enter Select ▸ Sub-Menu F10 Save Changes & Exit

See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
On Board SCSI	Disabled [Enabled]	Enable or disable expansion of SCSI BIOS on the motherboard.	
On Board LAN 1, 2	Disabled [Enabled]	LAN1: Enable or disable 10/100BASE LAN controller on the motherboard. LAN2: Enable or disable 1000BASE LAN controller on the motherboard.	
PCI Slot 1 - PCI Slot 3	Disabled [Enabled]	Enable or disable BIOS on a device (board) connected to the PCI bus. Select "Enabled" for the graphic accelerator board. Always select "Enabled" for the SCSI PCI device to which the hard disk that contains OS is connected. Select "Disabled" for Option ROM of PCI LAN device when the network boot feature is not used.	#1: #2: #3:

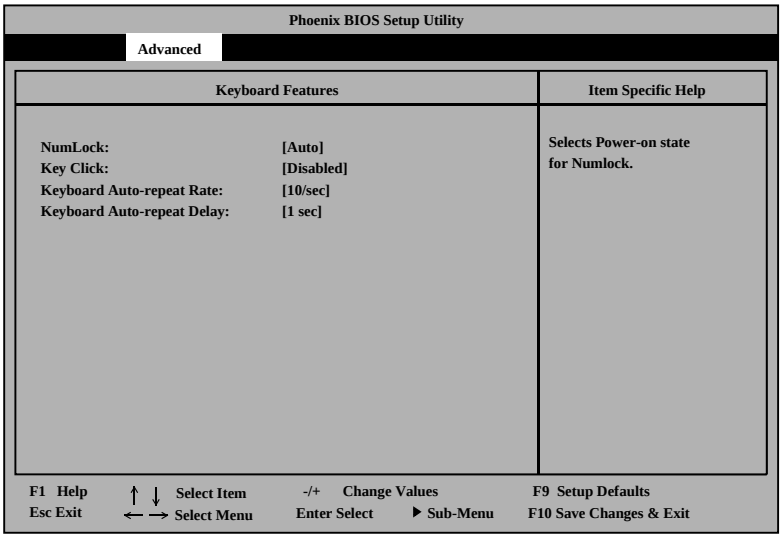
[ ]: Factory-set

IMPORTANT:

For the slot which a graphical accelerator board is installed, do not specify “Disabled”.

Keyboard Features

Select "Keyboard Features" on the Advanced menu to display the following screen. The NumLock submenu allows you to make keyboard settings.



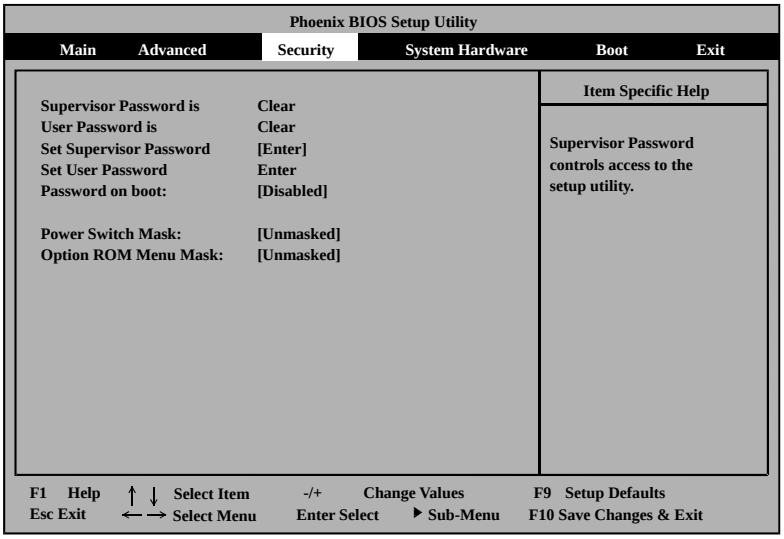
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
NumLock	[Auto] On Off	Enable or disable the NumLock feature at system start-up. If "Auto" is selected, the NumLock feature will be enabled when an entry with the keypad is detected.	
Key Click	[Disabled] Enabled	Enable or disable the key click sound.	
Keyboard Auto-repeat Rate	2/sec 6/sec [10/sec]	Select the number of characters repeatedly output in one second when a key is pressed.	
Keyboard Auto-repeat Delay	0.25 sec 0.5 sec 0.75 sec [1 sec]	Select a period before a key character starts repeated.	

[ ]: Factory-set

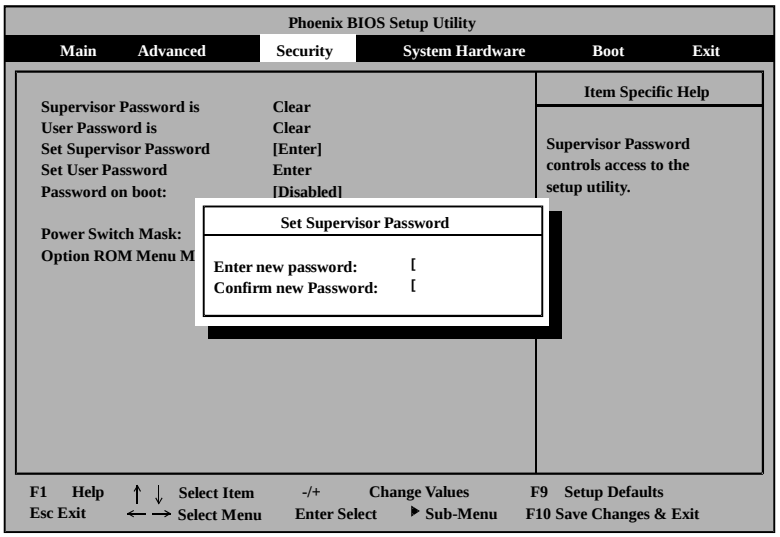
Security

Move the cursor onto "Security" to display the Security menu.


Phoenix BIOS Setup Utility
Main Advanced Security System Hardware Boot Exit
Supervisor Password is Clear
User Password is Clear
Set Supervisor Password [Enter]
Set User Password Enter
Password on boot: [Disabled]
Power Switch Mask: [Unmasked]
Option ROM Menu Mask: [Unmasked]
Item Specific Help
Supervisor Password controls access to the setup utility.
F1 Help Select Item -/+ Change Values F9 Setup Defaults
Esc Exit Select Menu Enter Select Sub-Menu F10 Save Changes & Exit

Select "Set Supervisor Password" or "Set User Password" and press **Enter** to display the following pop-up screen.

The screen below shows when "Set Supervisor Password" is selected.


Phoenix BIOS Setup Utility
Main Advanced Security System Hardware Boot Exit
Supervisor Password is Clear
User Password is Clear
Set Supervisor Password [Enter]
Set User Password Enter
Password on boot: [Disabled]
Power Switch Mask:
Option ROM Menu M
Set Supervisor Password
Enter new password: [
Confirm new Password: [
Item Specific Help
Supervisor Password controls access to the setup utility.
F1 Help Select Item -/+ Change Values F9 Setup Defaults
Esc Exit Select Menu Enter Select Sub-Menu F10 Save Changes & Exit

Set a password on this pop-up screen. Enter a password of up to seven alphanumeric characters and symbols from the keyboard.

IMPORTANT:

- User password setup is not available before Supervisor password setup.
- Do not set any password before installing the OS.

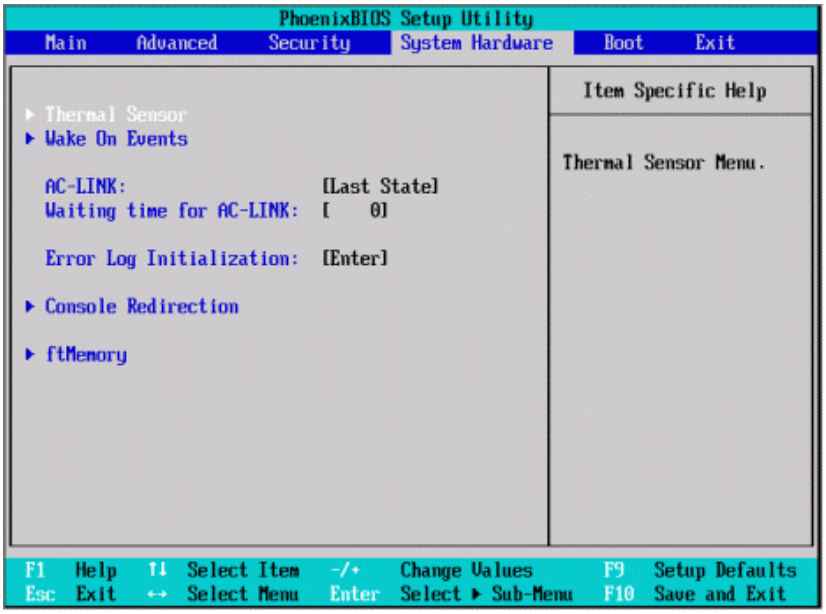
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Supervisor Password is	[Clear] Set	Indicates Supervisor password setup status (view only).	
User Password is	[Clear] Set	Indicates User password setup status (view only).	
Set Supervisor Password	Up to 7 alphanumeric characters	Press **Enter** to display the supervisor password entry screen. With the supervisor password, all SETUP menus are available for access. This option is available only when you log into the SETUP utility with the supervisor password.	
Set User Password	Up to 7 alphanumeric characters	Press **Enter** to display the user password entry screen. With a user password, accessing the SETUP menus is restricted. This option is available only if the Supervisor Password is specified.	
Password on boot	Enabled [Disabled]	Specify whether to request a password entry at boot-up. Supervisor password setup is required beforehand. When the supervisor password is specified and this option is disabled, the BIOS assumes that a system boot attempt is made by a user.	
Power Switch Mask	[Unmasked] Masked	Enable or disable the POWER switch on the server. If "Masked" is selected, power-off with the POWER switch becomes unavailable after OS boot-up. (Forced shut down also becomes unavailable. Forced shut down is a feature to shut down by pressing the POWER switch for over four seconds.)	
Option ROM Menu Mask	[Unmasked] Masked	Enable or disable key entries during optional ROM expansion.	

[ ]: Factory-set

System Hardware

Move the cursor onto "System Hardware" to display the System Hardware menu.


PhoenixBIOS Setup Utility
Main Advanced Security System Hardware Boot Exit
Item Specific Help
Thermal Sensor
Wake On Events
Thermal Sensor Menu.
AC-LINK: [Last State]
Waiting time for AC-LINK: [0]
Error Log Initialization: [Enter]
Console Redirection
ftMemory
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

To make a selection for "Thermal Sensor", "Wake On Event", and "Console Redirection", first select a desired option and press **Enter** to display its submenu.
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
AC LINK	Stay Off [Last State] Power On	Specify the AC LINK feature by selecting the status of the power supply unit of the server when the AC power supply restarts. (See the table on the next page for details.) Do not select the parameters other than "Stay Off" when "Enabled" is selected for "Wake On Lan."	
Waiting time for AC-LINK	[0], 10~3600	Set maximum waiting time in second for AC-LINK. If either of ACs is not supplied in time, the system will be turned on as simplex config. Value 0 means the system waits eternally. Range [0 or 10-3600sec.]	
Error Log Initialization	Enter	Press **Enter** to initialize the error log. The message "Error Log Cleared" appears upon successful completion. If failed, the message "Error Log Not Cleared!" appears.	

[ ]: Factory-set

IMPORTANT: It is recommended that “Waiting time for AC-LINK” be 3600 when you use UPSs in the redundant configuration.

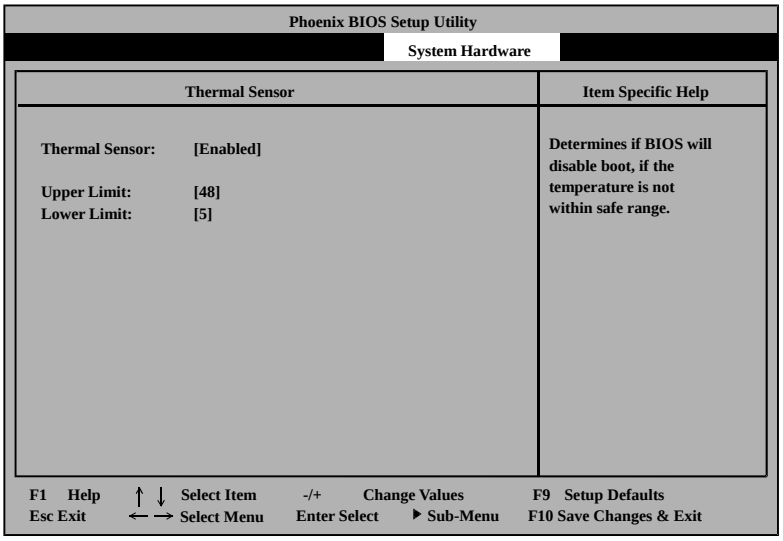
The table below lists how selections for "AC LINK" determine the power status of the server when the power supply to the server restarts.

State before powered off	Parameter		
	Stay Off	Last State	Power On
In service	Off	On	On
Out of service (DC power: Off)	Off	Off	On
Forced shutdown *	Off	Off	On

* Pressing the POWER switch for over four seconds shuts down the power to the server.

Thermal Sensor

Select "Thermal Sensor" on the System Hardware menu and press **Enter** to display the following screen.


Phoenix BIOS Setup Utility
System Hardware
Thermal Sensor
Item Specific Help
Thermal Sensor: [Enabled]
Upper Limit: [48]
Lower Limit: [5]
Determines if BIOS will disable boot, if the temperature is not within safe range.
F1 Help ↑ ↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← → Select Menu Enter Select ▸ Sub-Menu F10 Save Changes & Exit

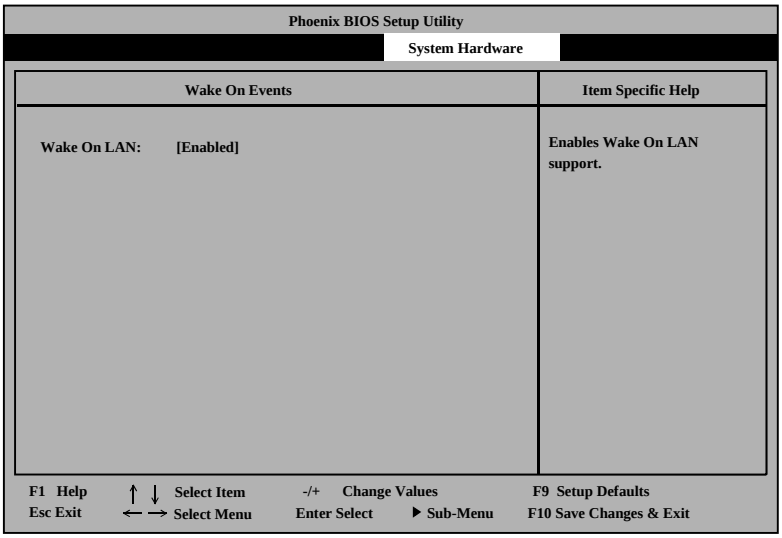
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Thermal Sensor	[Enabled] Disabled	Enable or disable the thermal sensor monitoring feature.	
Upper Limit	7 - [48] - 80	Specify the upper limit temperature for boot-up restriction in Celsius. Use + and/or - keys to specify a value by adding a number greater than 7 to the value specified for Lower Limit.	
Lower Limit	0 - [5] - 73	Specify the lower limit temperature for boot-up restriction in Celsius. Do not specify 4 degrees or lower. Use + and/or - keys to specify a value by deducting a number greater than 7 to the value specified for Upper Limit.	

[ ]: Factory-set

Wake On Events

Select "Wake On Events" on the System Hardware menu and press **Enter** to display the following screen.



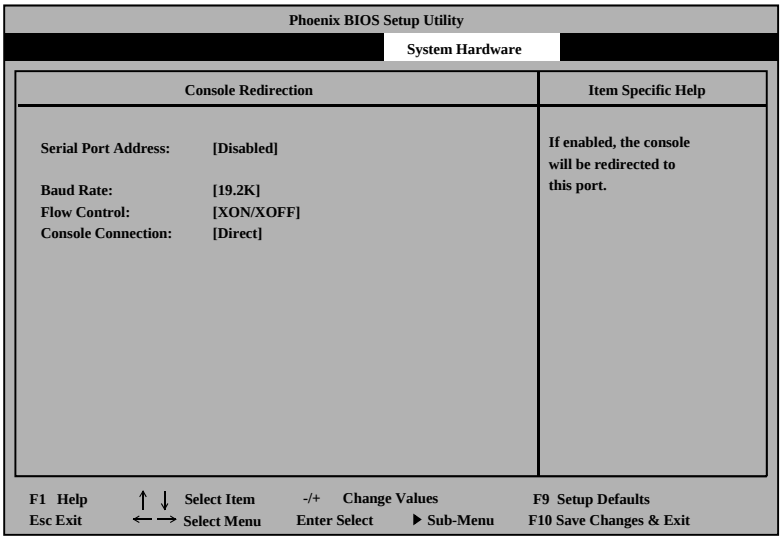
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Wake On LAN	Disabled [Enabled]	Enable or disable the remote power-on feature via the network. When "Enable" is selected, change the "AC-LINK" setting in the "System Hardware" to "Stay Off".	

[ ]: Factory-set

Console Redirection

Select "Console Redirection" on the System Hardware menu and press **Enter** to display the following screen.



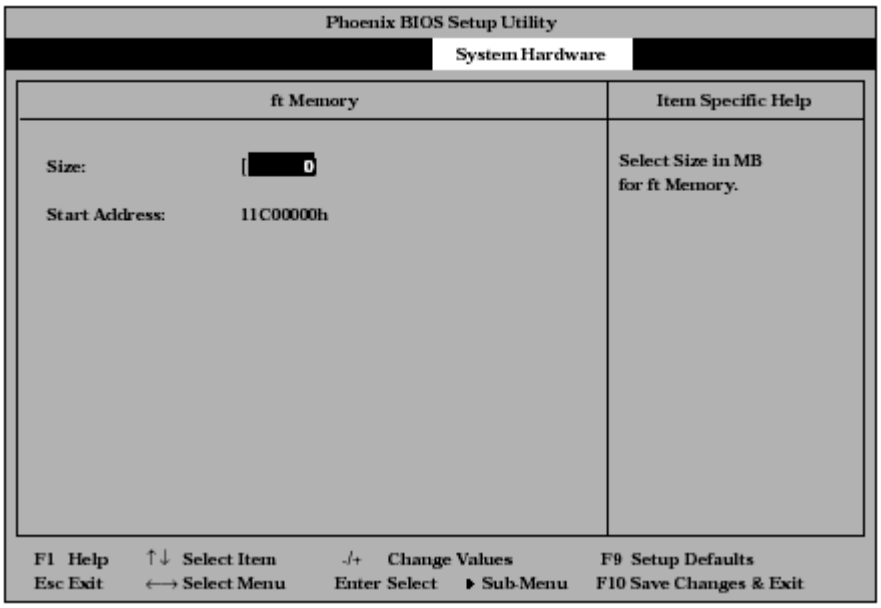
See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Serial Port Address	[Disabled] On-board COM B	Select a serial port to connect the HW console. Selecting "On-board COM B" changes "Boot-time Diagnostic Screen" to "Enabled".	
Baud Rate	[19.2K] 57.6K	Select a baud rate for communications with the connected HW console.	
Flow Control	[None] XON/XOFF	Select a flow control method.	
Console Connection	[Direct] Via modem	Select a connection with the HW console.	

[ ]: Factory-set

ft Memory

Select "ft Memory" on the System Hardware menu and press **Enter** to display the following screen.



See the table below for setup options on the screen.

Option	Parameter	Description	Your Setting
Size	[0]	Size of ft Memory is specified (MB)	
Start Address	-	Shows the start address of ft Memory (view only)	

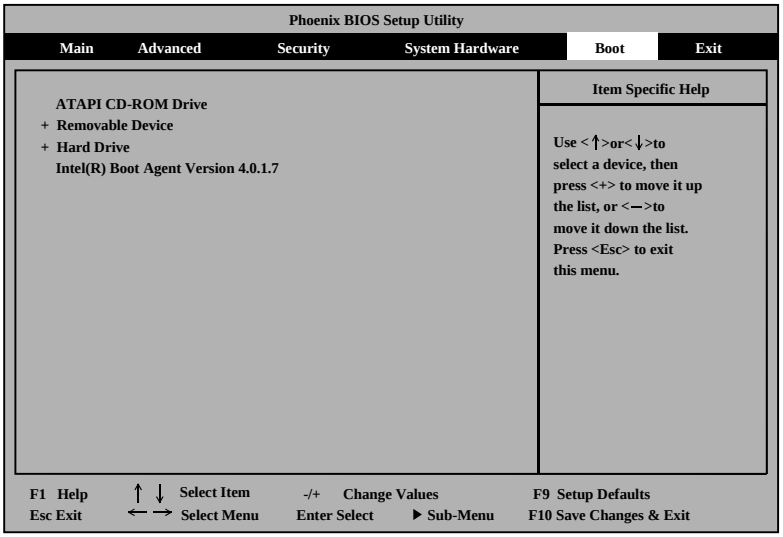
[ ]: Factory-set

IMPORTANT:

- Unless you use ft Memory, do not change the factory setting.
- To use ft Memory, you need to prepare an “ft Memory RAM Disk.”
- If you specify/change the size of ft Memory on the ft Memory RAM Disk (not this menu), the changes will take effect automatically.
- For details, see manuals included with the ft Memory RAM Disk.

Boot

Move the cursor onto "Boot" to display the Boot menu.



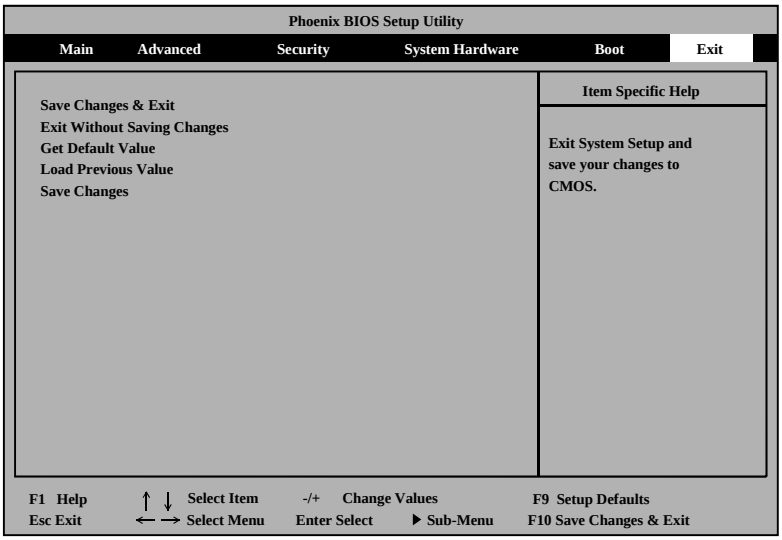
The server searches for the boot device according to the order specified in this menu and use the software to boot the system if found.

You can change the boot device order using ↑ or ↓ and + or –. Move the cursor to select the device by ↑ or ↓, and then change the priority using + or –.

IMPORTANT: Specify the device boot order as shown above to start the NEC EXPRESSBUILDER.

Exit

Move the cursor onto "Exit" to display the Exit menu.

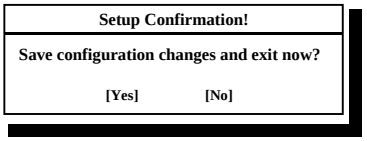


The following describes each option on the Exit menu:

- Save Changes & Exit

  Select this option to save the current configuration data into the CMOS (non-volatile memory) and exit the SETUP utility.

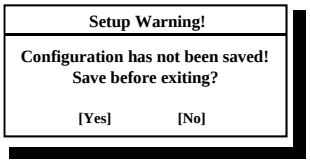
  The following screen appears:



  Select "Yes" to save the current configuration data into the CMOS (non-volatile memory) and exit the SETUP utility. The server will automatically restart the system.

- Exit Without Saving Changes

  Select this option to discard the current configuration data and exit the SETUP utility.

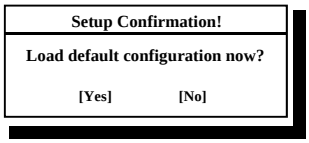


  Select "No" to discard the current configuration data and exit the SETUP utility. Select "Yes" to save the current configuration data into the CMOS, to exit the SETUP utility, and to restart the server automatically.

- Get Default Value

  Select this option to restore all default values (factory-set values) of the SETUP utility.

  The following screen appears:



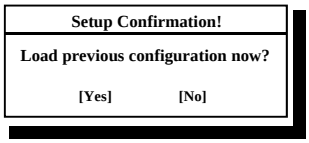
  Select "Yes" to restore default values. Select "No" to return to the Exit menu screen.

IMPORTANT: The default value slightly differs from the factory-set value. Check all setting values before restoring the default value.

- Load Previous Values

  Select this option to discard the current configuration data and restore the previous configuration data.

  The following screen appears:

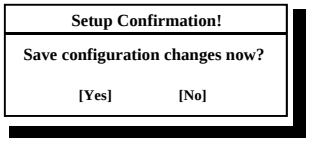


  Select "Yes" to discard the current configuration data and restore the previous one.

- Save Changes

  Select this option to save the current configuration data into the CMOS (non-volatile memory) and stay on the SETUP utility.

  The following screen appears:



  Select "Yes" to save the current configuration data into the CMOS (non-volatile memory).

SCSI BIOS ~ *Fast!*UTIL ~

For several settings of the SCSI controller on the motherboard, the SCSI BIOS utility "*Fast!*UTIL" is used.

The SCSI BIOS utility can be started by simple keystrokes during execution of POST without use of a special start disk.

The SCSI BIOS built in the server is set to the optimum at the shipment. Accordingly, the SCSI BIOS may not be changed by using this utility.

IMPORTANT:

- Leave the settings for the SCSI controller to which built-in hard disks are connected as they are at shipment. If any of the settings are changed, see the description in this document to return to the settings at shipment. The controllers installed in each module must be configured individually.
- *Fast!*UTIL of the latest version is installed in the NEC Express5800/ft series. Accordingly, the setting screen may be different from that described in this document. See the online help or contact your sales agent for the setting items different from those in this document.

Start

The procedure of starting *Fast!*UTIL is described below.

Notes

Note the following before starting *Fast!*UTIL.

- Settings for built-in hard disk

  Leave the settings for the built-in hard disk as they are at shipment. The built-in host adapter is specified as QLA12160 Ultra3 2000 in the Select Host Adapter dialog box.

- Settings of built-in SCSI controller installed in each group
  - Mount only the PCI module which has the built-in SCSI controller that you want to check the settings and start *Fast!*UTIL. Remove the other PCI module from the system.
  - Do not change the factory settings of the built-in SCSI controller.
  - Although there may be descriptions that the SCSI BIOS of the host adapter needs to be configured in manuals for tape devices, etc., this server does not require modifications to the settings. Do not change the settings.

Start Procedure

Start *Fast!*UTIL in the procedure below:

1. Turn on the power of the server.

   The start message appears on a screen in the middle of POST.

2. Press **Q** and **Ctrl** together.

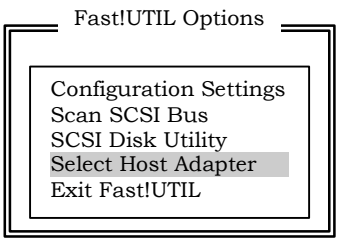
   *Fast!*UTIL is started.

IMPORTANT: Press these keys before message "QLogic Adapter using IRQ number x" or later appears.

<Example>

```
QLogic Corporation
QLA 1216x PCI SCSI ROM BIOS Version X.XX
Copyright (C) QLogic Corporation 1993-2001 All rights reserved.
www.qlogic.com

Press <CTRL-Q> for Fast!UTIL

ISP12160 Firmware Version xx.xx.xx
QLogic Adapter using IRQ number X

Device   Device   Adapter  SCSI  SCSI  Vendor    Product   Product
Number   Type     Number   ID    LUN   ID        ID        Revision

81       Disk     0        0     0     SEAGATE   ST32550   7394
```

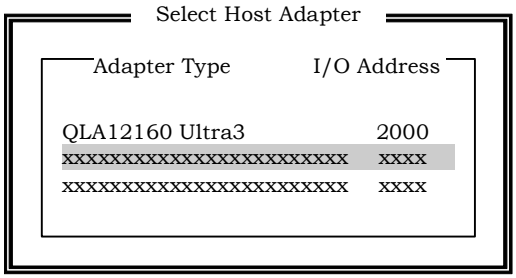
3. Highlight "Select Host Adapter" using the cursor keys and press **Enter**.



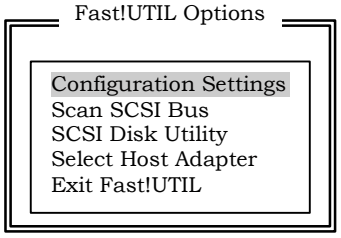
4. Select the proper adapter.

IMPORTANT: The adapter "QLA12160 Ultra3 2000" is used for built-in hard disk. Do not select it.

Highlight the displayed item with the cursor keys and press **Enter**.

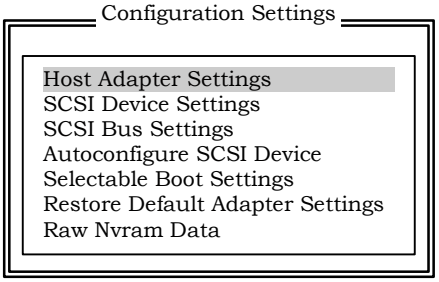


The display returns to "Fast!UTIL Options." The name of the selected host adapter appears at the upper left corner of the screen.



Configuration Settings

If you select "Configuration Settings" from the "Fast!UTIL Options" menu, the screen for setting the configuration appears.



Host Adapter Settings

If you put the cursor on "Host Adapter Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the host adapter appears.

The table below shows the parameters of the setting items and their factory settings.

Submenu item	Parameter	Description
BIOS Address	-	View only
BIOS Revision	-	View only
Adapter Serial Number	-	View only
Interrupt level	-	View only
Host Adapter BIOS	[Enable] Disable	Specify whether the BIOS extension of the host adapter is enabled or disabled.
PCI Bus DMA Burst	[Enable] Disable	Specify whether the DMA burst transfer on the PCI bus is enabled or disabled.
CDROM Boot	Enable [Disable]	Specify whether the start from CD-ROM is enabled or disabled.
Adapter Configuration	[Auto] Manual Safe	Specify whether the adapter configuration is set automatically by BIOS, manually, or safely.
Drivers Load RISC	[Enable] Disable	Specify whether the load of RISC codes is enabled or disabled.
>4GByte Addressing	Enable [Disable]	Specify whether hard disks of 4 GB or larger is used or not.
Fast Command Porting	[Enable] Disable	Do not change the factory setting.

[ ]: Factory-set

SCSI Device Settings

If you put the cursor on "SCSI Device Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the device connected to the host adapter appears.

The table below shows the parameters of the setting items and their factory settings.

IMPORTANT: The settings can be made for each SCSI bus.

Submenu item	Parameter		Description
	SCSI Bus0	**SCSI Bus1**	
Disconnects OK	[Yes] No*	[Yes] No	Specify whether the disconnection of SCSI devices from the SCSI bus is enabled or disabled. * On Bus0, select "No" for ID8.
Check Parity	[Yes] No	[Yes] No	Specify whether the parity check is provided or not.
Enable LUNs	[Yes] No	[Yes] No	Specify whether more than one LUN numbers are given to SCSI ID.
Enable PPR	[Yes] No	[Yes] No	Do not change the factory setting.
Enable Device	[Yes] No	[Yes] No	Do not change the factory setting.
Negotiate Wide	[Yes] No	[Yes] No	Specify whether the wide (32 bits) transfer is enabled or disabled.
Negotiate Synchronous	[Yes] No	[Yes] No	Specify whether the synchronous transfer is enabled or disabled.
Tagged Queuing	[Yes] No	[Yes] No	Do not change the factory setting.
Sync Offset	00, 02, 04, 06, 08, 10, 12, 14, 16, 18, 20, 22, [24]	00, 02, 04, 06, [08], 10, 12, 14, 16, 18, 20, 22, 24	Select the proper offset value in synchronous transfer.
Sync Period	Transfer Rate (Mbytes/sec)	Transfer Rate (Mbytes/sec)	Select the proper speed in synchronous transfer.
	[9] 160 (Ultra3 SCSI)	9 160 (Ultra3 SCSI)	
	10 80 (Ultra2 SCSI)	[10] 80 (Ultra2 SCSI)	
	12 40 (Ultra SCSI)	12 40 (Ultra SCSI)	
	25 20 (Fast SCSI)	25 20 (Fast SCSI)	
	40 12.5	40 12.5	
Exec Throttle	1, 4, 8, [16], 32, 64, 128, 255	1, 4, 8, [16], 32, 64, 128, 255	Do not change the factory setting.

[ ]: Factory-set

SCSI Bus Settings

If you put the cursor on "SCSI Bus Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the SCSI bus of the host adapter appears.

The table below shows the parameters of the setting items and their factory settings.

IMPORTANT: The settings can be made for each SCSI bus.

Submenu item	Parameter		Description
	SCSI Bus0	SCSI Bus1	
SCSI Bus SCSI ID	0, 1, 2, 3, 4, 5, 6, [7], 8, 9, 10, 11, 12, 13, 14, 15	0, 1, 2, 3, 4, 5, 6, [7], 8, 9, 10, 11, 12, 13, 14, 15	Select the SCSI ID given to SCSI bus.
SCSI Bus Reset	[Enabled] Disabled	[Enabled] Disabled	Make the reset valid or invalid in SCSI buses.
SCSI Bus Reset Delay	0, 1, 2, 3, 4, [5], 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	0, 1, 2, 3, 4, [5], 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Leave this item as factory-set.
SCSI Bus Termination	Auto High only Disabled [Enabled]	[Auto] High only Disabled Enabled	Set the termination resistance of SCSI bus.

[ ]: Factory-set

Autoconfigure SCSI Device

If you put the cursor on "Autoconfigure SCSI Device" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the device connected to the host adapter appears.

The parameters of the setting items and their factory settings are the same as those shown in the table for "SCSI Device Settings."

IMPORTANT:

- The settings can be made for each SCSI bus and SCSI ID. Check the SCSI ID of the target device before changing the settings.
- The factory settings are the same for both SCSI bus 0 and SCSI bus 1.
- The following items can be changed by setting "Adapter Configuration" in "Host Adapter Settings" to "Manual."
  – Enable Device
  – Enable LUNs
  – Negotiate Wide
  – Negotiate Sync
  – Tagged Queuing
  – Sync Offset
  – Sync Period
  – Exec Throttle

Selectable Boot Settings

If you put the cursor on "Selectable Boot Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the screen for setting the information on the start from the device connected to the host adapter appears.

Submenu item	Parameter	Description
Selectable SCSI Boot	Enabled [Disabled]	Specify whether the boot from SCSI device can be selected or not.
SCSI Bus	[0] 1	Select the bus to which the started SCSI device is connected.
SCSI Boot ID	[0], 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Set the SCSI ID of the started SCSI device.
SCSI Boot Lun	[0], 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15	Select the number of the LUN to which the started SCSI device is bound.

[ ]: Factory-set

Restore Default Settings

If you put the cursor on "Restore Default Settings" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the display changes to the screen for returning the setting values to the default values.

IMPORTANT: The default values can be restored for each SCSI bus.

Raw Nvram Data

If you put the cursor on "Raw Nvram Data" with keyboard cursors (↓ and ↑) in the "Configuration Settings" menu and press **Enter**, the information on NvRAM installed in the host adapter is displayed in the hexadecimal format.

This function is provided to solve problems. The information cannot be edited.

Scan SCSI Bus

If you select "Scan SCSI Bus" from the "Fast!UTIL Options" menu, the list of devices connected to each SCSI bus is displayed in the order of SCSI IDs. The information to be displayed includes the device manufacturer, product name and firmware revision.

SCSI Disk Utility

If you select "SCSI Disk Utility" from the "Fast!UTIL Options" menu, the utility menu which is used to format or verify the connected SCSI devices appears.

IMPORTANT:

- Devices can be processed in each SCSI bus and SCSI ID. Be careful not to forget the selected bus and ID.
- When performing low-level format, select [Advanced]-[Monitoring Configuration]-[Option ROM Scan Monitoring] and choose “Disabled” in BIOS setup utility. See “SYSTEM BIOS ~ SETUP ~” (page 4-2) for details of the setting.
- The selection of "Continue With Format" in "Low- Level Format" causes all data in disks to be lost.

- Low-Level Format

  Formats the device selected in "Continue With Format" physically. If you select "Do Not Format Disk," the previous menu appears again.

- Verify Disk Media

  Verifies the device selected in "Continue With Verify." If you select "Do Not Verify Media," the previous menu appears again.

- Select Different Disk

  Selects another SCSI device on the same SCSI bus.

Select Host Adapter

If you select "Select Host Adapter" from the "Fast!UTIL Options" menu, the list of the host adapters installed in the main system is displayed. Select an adapter to change its settings.

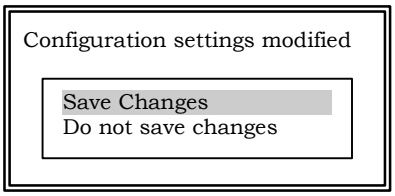
IMPORTANT: The adapter "QLA12160 Ultra3 2000" is used for built-in hard disk. Do not select it.

The utility menu, which is used to format or verify the connected SCSI devices, appears.

Exit *Fast!*UTIL ~ Termination and Storage of *Fast!*UTIL ~

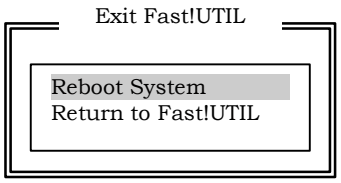
After changing the settings, press **Esc** several times to display the "Fast!UTIL Options" menu. If you select "Exit Fast!UTIL" from the menu, the screen for terminating *Fast!*UTIL appears.

However, if the settings are different from those before the start, the screen prompting you to save the settings appears before the display of the termination screen.



Select either "Save changes" or "Do not save changes" by using keyboard cursors (↓ and ↑) and press **Enter**.

Pressing **Enter** causes the screen for terminating *Fast!*UTIL to appear.



Select either "Reboot System" or "Return to Fast!UTIL" and press **Enter**.

Setting List for Optional SCSI Device

If you add an optional SCSI device, do not change the factory settings of built-in SCSI controller. For information on optimal SCSI devices for NEC Express5800/ft series, contact your sales agent.

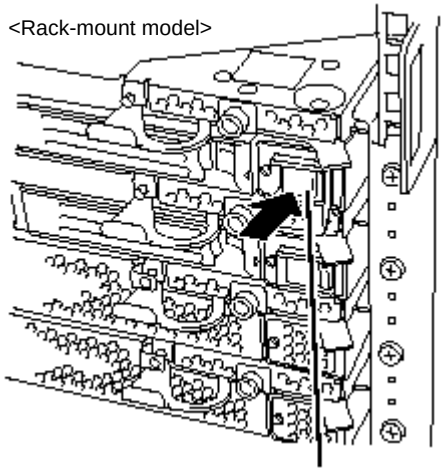
FORCED SHUTDOWN AND CLEAR

Read this section if your server does not operate as expected, or if you want to return all setup values to those made at shipment.

Forced Shutdown

Use this function when an OS command does not shut down the server, the POWER switch does not turn off the server, or resetting does not work.

Press and hold the POWER switch on the server for over four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 30 seconds after turning off the power (forced shutdown).



IMPORTANT: If the remote power-on feature is used, power on the server and start the OS, and turn off the power in the normal way.

Clear CMOS / Password (Configuring Motherboard Jumpers)

With the pre-installed SETUP utility, you can set desired passwords to protect data stored on the server from unauthorized user access. If you forget the passwords, you can clear them by following the procedure described in this section.

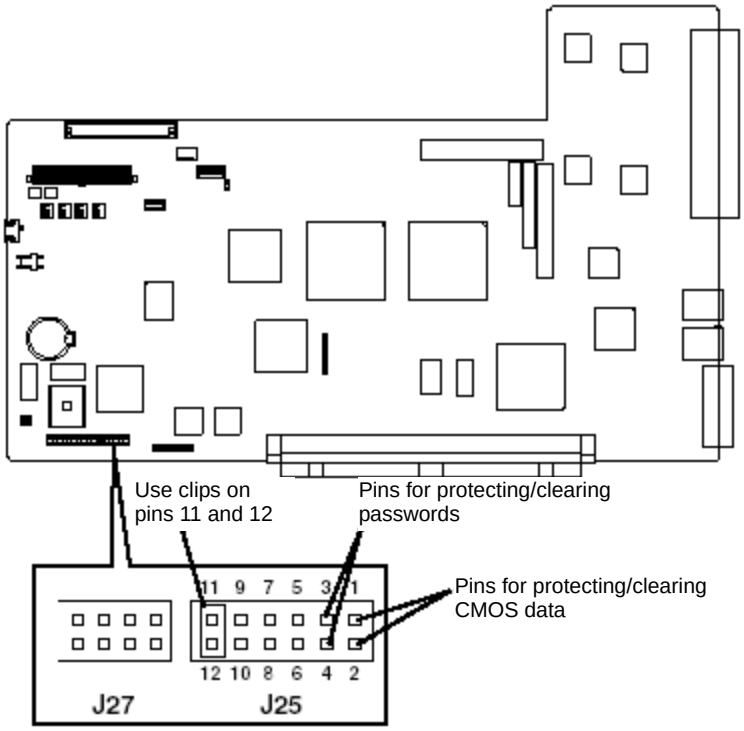
You can also use the same procedure to clear the CMOS data in the server.

IMPORTANT:

- Clearing the CMOS data restores the factory settings.
- To clear passwords or CMOS data, power off the server.

To clear passwords or the CMOS data, use the jumper switch on the PCI module board of the server. The following figure illustrates the jumper switch location.

IMPORTANT: Do not change any other jumper switch settings. Any improper change may cause the server to fail or malfunction.



- Pins for protecting/clearing the passwords

  Place the clip on the two pins to clear the passwords.

  Remove the clip from these pins to protect the passwords (factory-set).

- Pins for protecting/clearing the CMOS data

  Place the clip on the two pins to clear the CMOS data.

  Remove the clip from these pins to protect the CMOS data (factory-set).

The following describe the clearing procedure.

⚠ WARNING

Observe the following instructions to use the server safely. There are risks of death or serious personal injury. See PRECAUTIONS FOR SAFETY in Chapter 1.

- Do not disassemble, repair, or alter the server.

How to Clear CMOS

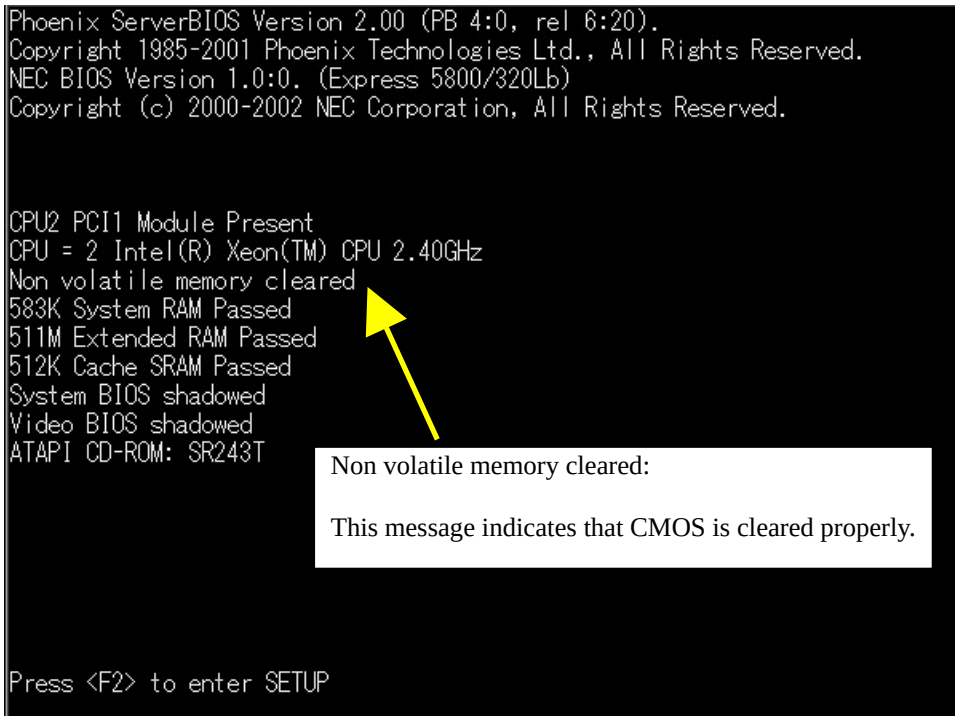
1. Power off the NEC Express5800/ft series and unplug the both power cords.
2. Remove the both PCI modules (#1 and #2) from the NEC Express5800/ft series (see “Removing PCI Module” on page 8-29).
3. Open the top cover of the PCI Module #1.
4. Make setting of jumper switch for clearing CMOS.

   Remove the clips from the jumper pins 11-12 and place them on the jumper pins 1-2 on the PCI Module #1.
5. Mount only the PCI Module #1 to the NEC Express5800/ft series (see “Installing PCI Module” on page 8-31).
6. Plug the both power cords and when the POWER Switch LED turns on, press it to power on the server.
7. When the following message appears after startup, press [CONTINUE].

Warning! CMOS Clear Jumper Installed
CMOS data has been reset with default values
Please remove the CMOS clear jumper
[CONTINUE]

TIPS:
A message informing you of the completion of CMOS clear and prompting you to clear CMOS will appear for 10 seconds. Note that even if you do not do anything, the process goes on and the server will be rebooted automatically.

8. If the message [Non volatile memory cleared] appears after rebooting and during POST, turn off the power by pressing the POWER switch and unplug the both power cords.


Phoenix ServerBIOS Version 2.00 (PB 4:0, rel 6:20).
Copyright 1985-2001 Phoenix Technologies Ltd., All Rights Reserved.
NEC BIOS Version 1.0:0. (Express 5800/320Lb)
Copyright (c) 2000-2002 NEC Corporation, All Rights Reserved.
CPU2 PCI1 Module Present
CPU = 2 Intel(R) Xeon(TM) CPU 2.40GHz
Non volatile memory cleared
583K System RAM Passed
511M Extended RAM Passed
512K Cache SRAM Passed
System BIOS shadowed
Video BIOS shadowed
ATAPI CD-ROM: SR243T
Non volatile memory cleared:
This message indicates that CMOS is cleared properly.
Press <F2> to enter SETUP

IMPORTANT:
If the message [Non volatile memory cleared] appears at normal startup, the jumper switch is set for clearing CMOS. Change back the jumper switch setting.

9. Remove the PCI Module #1 from NEC Express5800/ft series (see “Removing PCI Module” on page 8-29).

10. Reset the jumper switch setting.

Remove the clips from the jumper pins 1-2 and place them on the jumper pins 11-12 on the PCI Module #1.

TIPS: If you place clips on other pins, the server may malfunction.

11. Mount the PCI Module #1 again to NEC Express5800/ft series (see “Installing PCI Module” on page 8-31) and plug the power cord to the AC inlet B (for Group1).

12. Likewise, mount the PCI Module #2 to NEC Express5800/ft series and plug the power cord to the AC inlet A (for Group2).

13. Shortly after you connect the both power cords, the BMC status LED of PCI Module #2 will start to blink.

When the BMC status LED goes off, the clear information of the PCI Module #1 is reflected to the PCI Module #2.

CHECK:

The BMC status LED blinks to show that synchronous processing is being performed between the two modules. When this process is complete, CMOS has also been cleared on PCI Module #2

TIPS:

- For the location of the AC inlet A, the AC inlet B, see “NAMES AND FUNCTIONS OF COMPONENTS” in Chapter 2.
- For the location of the BMC status LED, see “NAMES AND FUNCTIONS OF COMPONENTS” in Chapter 2.
- For description of the BMC status LED, see “LEDs” in Chapter 2.

How to Clear Passwords

1. Power off NEC Express5800/ft series and unplug the both power cords.
2. Remove the both PCI modules (#1 and #2) from the NEC Express5800/ft series (see page 8-29 “Removing PCI Module”).
3. Open the top cover of the PCI Module #1.
4. Make setting of jumper switch for clearing the password.

   Remove the clips from the jumper pins 11-12 and place them on the jumper pins 3-4 on the PCI Module #1.
5. Mount the PCI Module #1 to NEC Express5800/ft series (see page 8-31 “Installing PCI Module”).
6. Plug the both power cords and when the POWER Switch LED turns on, press it to power on NEC Express5800/ft series.
7. When the following POST screen appears after the startup, press the POWER Switch to turn off the power.

QLogic Corporation
QLA1216x PCI SCSI ROM BIOS Version 7.32 SVID 159C
Copyright (C) QLogic Corporation 1993-2001. All rights reserved.
www.qlogic.com
Press <CTRL-Q> for Fast!UTIL
ISP12160 Firmware Version 10.04.31
QLogic adapter using IRQ number 5
Checking Adapter 0 SCSI Bus 0 SCSI ID 0

8. Unplug the both power cords.
9. Remove PCI Module #1 from NEC Express5800/ft series (see page 8-29 “Removing PCI Module”).
10. Reset the jumper switch setting.

    Remove the clips from the jumper pins 3-4 and place them on the jumper pins 11-12 on the PCI Module #1.

TIPS: If you place it on other pins, the server may malfunction.

11. Mount the PCI Module #1 again to the NEC Express5800/ft series (see page 8-31 “Installing PCI Module”) and plug the power cord to the AC inlet B (for Group1). (The POWER Switch LED will be turned on.)

12. Likewise, mount the PCI Module #2 to the NEC Express5800/ft series and plug the power cord to the AC inlet A (for Group2).

13. Shortly after you connect the both power cords, the BMC status LED on PCI Module #2 will start to blink.

14. When Password clear is completed, the BMC status LED will go off.

CHECK:

The BMC status LED blinks to show that synchronous processing is being performed between the two modules. When this process is complete, Password has also been cleared on PCI Module #2.

TIPS:

- For the location of the AC inlet A, the AC inlet B, see “NAMES AND FUNCTIONS OF COMPONENTS” in Chapter 2.
- For the location of the BMC status LED, see “NAMES AND FUNCTIONS OF COMPONENTS” in Chapter 2.
- For description of the BMC status LED, see “LEDs” in Chapter 2.

Chapter 5

Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER CD-ROM that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

NEC EXPRESSBUILDER

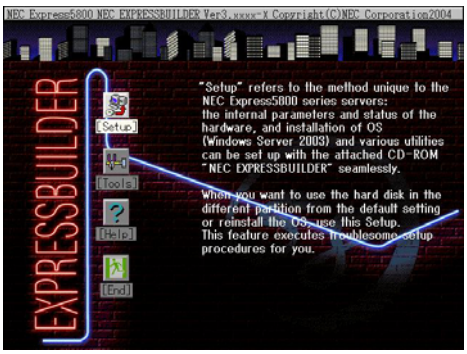
The NEC EXPRESSBUILDER, integrated setup software, can automatically detect the hardware connected to an NEC Express5800/ft series machine to advance the processing. The hardware subject to setup with the NEC EXPRESSBUILDER should have the same configuration as that for operation.

Start Menu

The NEC EXPRESSBUILDER provides three procedures to start the server as described below. The menus and items appearing on the screen vary depending on the procedures.

- Booting (starting) the server from NEC EXPRESSBUILDER CD-ROM

  For the procedure, insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the NEC Express5800/ft series and start the NEC Express5800/ft series from the system in the NEC EXPRESSBUILDER. When the NEC Express5800/ft series is started by using this procedure, the NEC EXPRESSBUILDER top menu shown on the right appears.


NEC Express5800 NEC EXPRESSBUILDER Ver3.xxxx-x Copyright(C)NEC Corporation2004
EXPRESSBUILDER
[Setup]
[Tools]
[Help]
[End]
"Setup" refers to the method unique to the NEC Express5800 series servers: the internal parameters and status of the hardware, and installation of OS (Windows Server 2003) and various utilities can be set up with the attached CD-ROM "NEC EXPRESSBUILDER" seamlessly.
When you want to use the hard disk in the different partition from the default setting or reinstall the OS, use this Setup. This feature executes troublesome setup procedures for you.

  Perform the NEC Express5800/ft series setup from this menu.

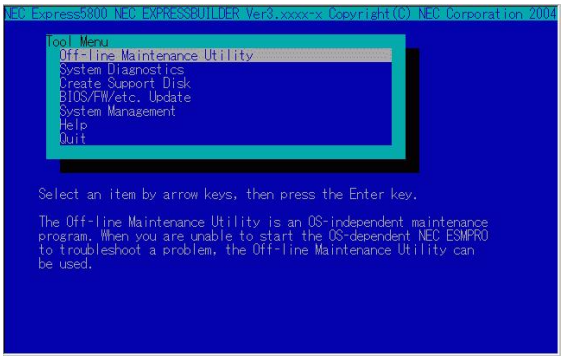
  IMPORTANT:

  - Don’t use this CD-ROM on computers other than NEC Express5800/ft series with which it is packaged (including other NEC Express5800 models). Otherwise, a breakdown may result.
  - The execution of "Setup" of the menu causes the OS installed previously to be erased. OS must also be reinstalled.

  See "NEC EXPRESSBUILDER Top Menu" for details.

- Booting (starting) the server from NEC EXPRESSBUILDER CD-ROM in the consoleless state

  If the NEC EXPRESSBUILDER is started from the CD-ROM drive in the server with the keyboard, mouse, and/or display unit not connected to the server, the NEC EXPRESSBUILDER Tools Menu shown on the right appears on the screen of the management computer (PC) connected to the server through LAN or COM (serial port).


NEC Express5800 NEC EXPRESSBUILDER Ver3.xxxx-x Copyright(C) NEC Corporation 2004
Tool Menu
Off-line Maintenance Utility
System Diagnostics
Create Support Disk
BIOS/FW/etc. Update
System Management
Help
Quit
Select an item by arrow keys, then press the Enter key.
The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

Then operate the server remotely from the management PC by using the items in the menu.

IMPORTANT:

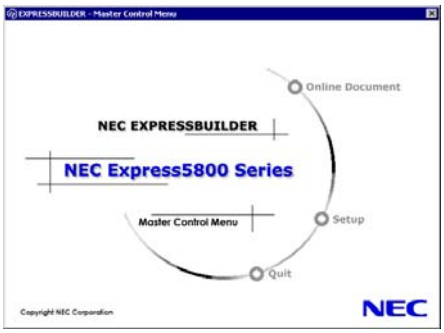
- Don't use this CD-ROM on computers other than NEC Express5800/ft series with which it is packaged (including other NEC Express5800 models). Otherwise, a breakdown may result.
- To use the consoleless feature, make sure that keyboard is not connected to the server. When a keyboard is connected, the consoleless feature is disabled because the NEC EXPRESSBUILDER determines that the server has a console. (The menu will not be displayed on the management PC.)

See "Consoleless Menu" described later for details.

- Inserting NEC EXPRESSBUILDER CD-ROM after Windows startup

The "Master Control Menu" (see figure below) starts automatically after you place the "NEC EXPRESSBUILDER" in the CD-ROM drive. A dialog box called "Master Control Menu" will appear.

For this dialog, see "Master Control Menu" described later.



NEC EXPRESSBUILDER Top Menu

The NEC EXPRESSBUILDER top menu is used for the setup of hardware and the setup and installation of OS.

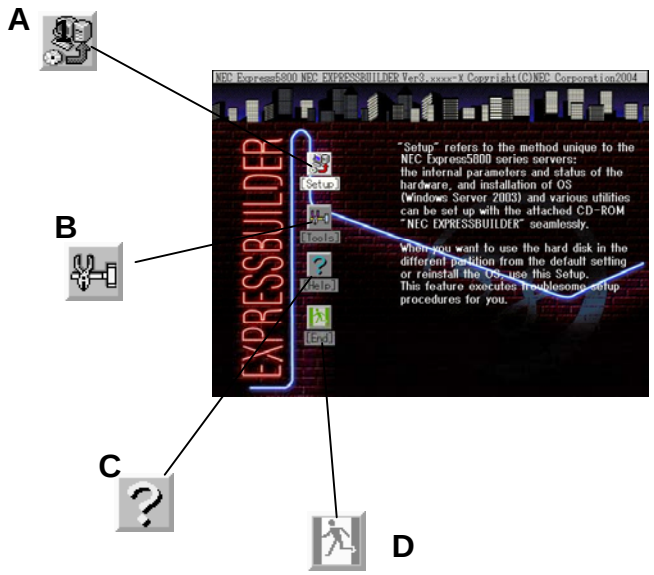
Start

Start the NEC EXPRESSBUILDER top menu following the procedure below:

1. Turn on the powers of peripherals and the power of the server in this order.
2. Insert the NEC EXPRESSBUILDER CD-ROM into the CD-ROM drive of the server.
3. After the CD-ROM is inserted, reset the system (by pressing **Ctrl** + **Alt** + **Delete**) or turn off the power and then on again to restart the server.

   The system is activated from the CD-ROM to start the NEC EXPRESSBUILDER.

After the NEC EXPRESSBUILDER is started, the NEC EXPRESSBUILDER top menu shown below appears.


A
B
C
D
EXPRESSBUILDER
Setup
Tools
Help
End
"Setup" refers to the method unique to the NEC Express5800 series servers: the internal parameters and status of the hardware, and installation of OS (Windows Server 2003) and various utilities can be set up with the attached CD-ROM "NEC EXPRESSBUILDER" seamlessly.
When you want to use the hard disk in the different partition from the default setting or reinstall the OS, use this Setup. This feature executes troublesome setup procedures for you.

A Setup
Performs various automatic setup operations including settings of internal parameters and states of hardware and installations of Windows Server 2003, Enterprise Edition and several utilities. Select this setup procedure if hard disks are used in a partition different from that defined at the purchase, or if OS is reinstalled.

B Tools
Starts each of the utilities stored in the NEC EXPRESSBUILDER individually to allow the operator to provide setup. Enables the setup without influence of installed OS.

C Help
Describes the NEC EXPRESSBUILDER. We recommend you to read through the help before the setup.

D Exit
The NEC EXPRESSBUILDER termination screen appears.

Setup

The setup program is exclusively used for your server to perform automatic setup operations within the range from the settings of internal parameters and states of hardware to the installation of Windows Server 2003, Enterprise Edition and several utilities.

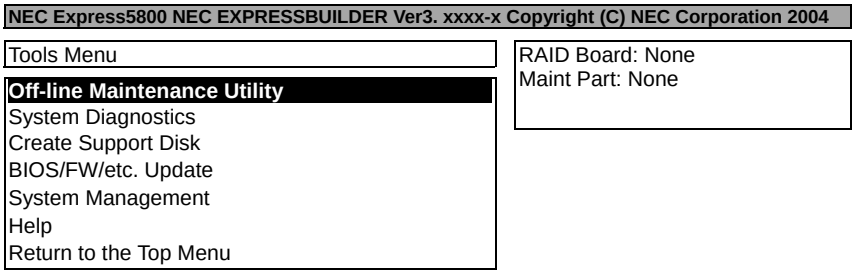
Use the setup program if hard disks are used with a partition different from that at purchase, or if OS is reinstalled. This feature carries out the complicated setup.

IMPORTANT:

- To install Windows Server 2003, Enterprise Edition in your server, use the setup program (excluding the case of performing the setup for the first time after the purchase). Any other methods cannot install Windows Server 2003, Enterprise Edition in the server.
- Because the setup is started from its first stage, the execution of the setup causes the data in the hard disk to be erased.

Tools

The Tools Menu is used to start each of the several utilities stored in the NEC EXPRESSBUILDER CD-ROM individually for manual setup by operator. Use the Tools Menu to provide settings that the setup program cannot do automatically or detailed settings. Also use the Tools Menu when system diagnosis is performed or a support disk is created. The items in the Tools Menu are described below.



- Off-line Maintenance Utility

  Off-line Maintenance Utility is an OS-dependent maintenance program that performs preventive maintenance and error analysis for your server. See Chapter 6 or the online help for details.

- System Diagnostics

  Executes several tests on the main system to examine the features of the system and the connections between the system and extension boards. If the system diagnosis is executed, the system check program is started depending on the system status. See the description in Chapter 6 to manipulate the system check program

- Create Support Disk

  In the support disk creation procedure, the starting support disk for starting a utility within the NEC EXPRESSBUILDER from a floppy disk and the support disk required in the installation of the operating system can be created. If you write down the titles appearing on the screen on the floppy disk labels, they can be easily managed later.

  The customer should prepare the floppy disks for creating the support disks.

  - Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER
    Creates a support disk required for recovering the system.
  - ROM- DOS Startup FD
    The support disk for starting the ROM -DOS system is created.
  - Off-line Maintenance Utility FD
    Creates a support disk for activating the Off-line Maintenance Utility.
  - System Diagnostics Utility FD
    The support disk for starting the system check program is created.
  - System Management Function FD
    The support disk for system management functions is created.

- BIOS/FW/etc. Update

  The program which is necessary for the update work is transferred to the floppy disk which the various update modules of BIOS/FW were stored in. After the reboot, an update program is started automatically from the floppy disk, and various BIOS/FW's are updated.

IMPORTANT: During the execution of the update program, do not turn off the power of the system. If the update is interrupted halfway, the system will not be able to be started.

- System Management functions

  Allow you to make settings of BMC (Baseboard Management Controller) to use its report functions and remote control from the management PC.

- Help

  Indicates the descriptions on several features of the NEC EXPRESSBUILDER.

- Return to the Top Menu

  Indicates the NEC EXPRESSBUILDER top menu.

Consoleless Menu

The NEC EXPRESSBUILDER contains the "consoleless" feature that enables configuration of the server by remote operation from the management PC, even if a console device such as keyboard is not connected to the server.

IMPORTANT:

- Don't use this CD-ROM on computers other than NEC Express5800/ft series with which it is packaged (including other NEC Express5800 models). Otherwise, a breakdown may result.
- To use the consoleless feature, make sure that keyboard is not connected to the server. When a keyboard is connected, the consoleless feature is disabled because the NEC EXPRESSBUILDER determines that the server has a console. (The menu will not be displayed on the management PC.)

Starting

Depending on the connection between the management PC and the main unit, there are two ways for startup:

- Startup from the management PC connected to LAN
- Startup from the management PC directly connected (serial port B)

For startup procedures, see "Remote Management Configuration for the Server without Console" described later in this chapter.

IMPORTANT:

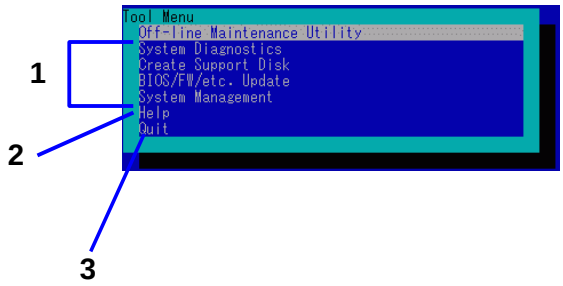
- Do not change the boot device order in the BOOT menu of BIOS SETUP. The consoleless feature cannot be used if the CD-ROM drive is not the first device to launch the system.
- For LAN connection, you can only use LAN port 1.
- For direct connection, you can only use Serial port B.
- For consoleless remote operation of the NEC Express5800/ft series, you need to save configuration information to a floppy disk. Prepare a formatted floppy disk.

TIPS: BIOS will be set as follows:

- RomPilot Support: [Enabled]
- Serial Port B: [2F8, IRQ3]
- Serial Port Address: [On-board COM B]
- Baud Rate: [19.2K]
- Flow Control: [None]
- Console Connection: [Direct]

Menu Items

Only the menu items available in consoleless operation are extracted from the NEC EXPRESSBUILDER Top Menu. See the NEC EXPRESSBUILDER Top Menu described earlier for each function.



1 See the "NEC EXPRESSBUILDER Top Menu".
2 Shows detailed explanation of each function.
3 Terminate the NEC EXPRESSBUILDER.

IMPORTANT:

- The following functions differ from the Tools Menu in the NEC EXPRESSBUILDER Top Menu.

  – Contents and operations of System Diagnostics (see "SYSTEM DIAGNOSTICS" in Chapter 6 for details.)

  – Disk type created in "Created Support Disk".

- System Diagnostics Utility
  When no keyboard is connected to the server, the System Diagnostic window is not displayed on the local console. Make sure to connect the keyboard to the server if you work on this utility from the local console.

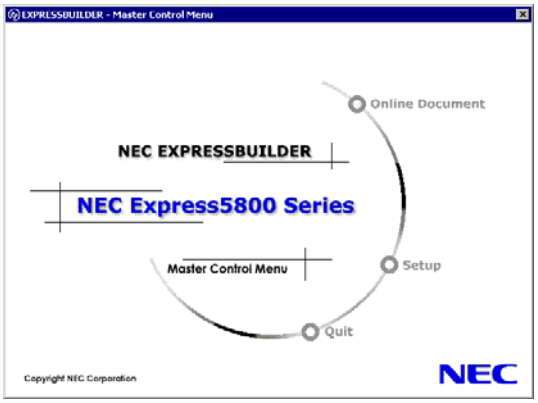
Master Control Menu

The Master Control Menu is used to:

- Read documentation,
- Install the management software, and
- Install the viewer application (Adobe Acrobat Reader).

TIPS:

- Master Control Menu requires Microsoft Windows 95 (or later) or Windows NT 4.0 (or later).
- To read documentation (HTML and PDF files) in the NEC EXPRESSBUILDER CD-ROM, the HTML browser (Microsoft Internet Explorer Version 5.0 (or later) or Netscape Communicator Version 4.0 (or later)), and Adobe Acrobat Reader Version 4.05 (or later) are required in your system.



Put the NEC EXPRESSBUILDER CD-ROM in the CD-ROM drive. Master Control Menu automatically appears on the screen. If the Autorun feature is invalid in your system, run the \MC\1ST.EXE file in the CD-ROM directly. Some items are grayed-out when the logon user does not have the authority of the Administrator or the system does not meet the requirements to install the application.

To use Master Control Menu:

- Click [Online Document], [Setup] or [Quit], or
- Right-click Master Control Menu window.

NEC ESMPRO Agent and Manager

NEC Express5800/ft series system management applications "NEC ESMPRO Manager" and "NEC ESMPRO Agent" are bundled to accessory CD-ROM "NEC EXPRESSBUILDER."

This manual describes the functions and features provided by NEC ESMPRO Manager and NEC ESMPRO Agent and the notes on their operations.

These applications are necessary for continuous operation of NEC Express5800/ft series.

Overview

NEC ESMPRO Manager and NEC ESMPRO Agent are the server management software provided for the stable operation of a server system and effective system operations. They can manage the configuration information and operating status of server resources to prevent server faults from occurring. If a server fault occurs, they detect the fault to notify the system Administrator of the occurrence. This enables the system Administrator to take appropriate action against faults.

- Importance of server management

  “Constantly stable operation” and “less management workload” are keywords in server management.

  - Stable operation of server

    Shutdown of a server immediately leads the customer to lose business opportunities and profits. This requires servers to always operate in their perfect state. If a fault occurs in a server, it is necessary to detect the occurrence as soon as possible, make clear the cause, and take appropriate action. The shorter the time taken from the occurrence of a fault to the recovery from the fault is, the smaller the loss of profits (and/or costs) is.

  - Load reduction of server management

    The server management requires many jobs. In particular, if the system becomes large or remote servers are used, required jobs increase further. The reduction of the load of the server management brings the decrease in costs (and thus customer's benefit).

- What are NEC ESMPRO Manager and NEC ESMPRO Agent?

  NEC ESMPRO Manager and NEC ESMPRO Agent are server management software used to manage and monitor NEC Express5800 series systems on the network. The installation of NEC ESMPRO Manager and NEC ESMPRO Agent enables the server configuration, performance, and fault information to be acquired, managed, and monitored realtime and also the occurrence of a fault to be detected immediately by the alert report function.

- Effects of using NEC ESMPRO Manager and Agent

  NEC ESMPRO Manager and NEC ESMPRO Agent have sufficient effects on a variety of needs in versatile and complicated system environments.

  - Detection of server fault

    NEC ESMPRO Agent collects a variety of fault information on NEC Express5800 series systems to identify the states of the systems. If a server detects a fault, the server provides NEC ESMPRO Manager with the proper alert report.

  - Prevention of server fault

    NEC ESMPRO Agent includes the preventive maintenance function predicting the occurrence of a fault in advance as countermeasures for preventing faults from occurring. It can previously detect the increase in the cabinet temperature and the empty capacity in a file system.

  - Management of server operation status

    NEC ESMPRO Agent can acquire the detailed hardware configuration and performance information on NEC Express5800 series systems. The acquired information can be viewed at any point through NEC ESMPRO Manager.

  - Collective management of distributed servers

    NEC ESMPRO Manager provides the GUI interface that allows servers distributed on the network to be managed efficiently.

Detection of Server Fault

NEC ESMPRO Manager and NEC ESMPRO Agent detect errors causing faults to occur at an early stage and notify Administrators of fault information real-time.

- Early detection of error

  If a fault occurs, NEC ESMPRO Agent detects the fault and reports the occurrence of the fault to NEC ESMPRO Manager (alert report). NEC ESMPRO Manager displays the received alert in the alert viewer and also changes the status colors of the server and server component in which the fault occurs. This allows you to identify the fault at a glance. Further, checking the content of the fault and the countermeasures, you can take appropriate action for the fault as soon as possible.

- Types of reported faults

  The table below lists the typical faults reported by NEC ESMPRO Agent.

Component	Reported information
CPU	• CPU load is over the threshold • CPU degrading, etc.
Memory	ECC 1-bit error detection, etc.
Power supply	• Voltage lowering • Power failure, etc.
Temperature	Temperature increase in cabinet, etc.
Fan	Fan failure (decrease in the number of revolutions), etc.
Storage	File system usage rate, etc.
LAN	• Line fault threshold over • Send retry or send abort threshold over, etc.

Prevention of Server Fault

NEC ESMPRO Agent includes the preventive maintenance function forecasting the occurrence of a fault as countermeasures for preventing faults from occurring.

NEC ESMPRO Manager and NEC ESMPRO Agent can set the threshold for each source in the server. If the value of a source exceeds the threshold, NEC ESMPRO Agent reports the alert to NEC ESMPRO Manager.

The preventive maintenance function can be set for a variety of monitoring items including cabinet temperature, and CPU usage rate.

Management of Server Operation Status

NEC ESMPRO Agent manages and monitors a variety of components installed in the server. You can view the information managed and monitored by NEC ESMPRO Agent on the data viewer of NEC ESMPRO Manager.

NEC ESMPRO Agent also manages and monitors all the components and conditions required to keep the server reliability at a high level such as hard disks, CPU, memory, fans, power supply, and temperature.

Monitoring (Management) of NEC Express5800/ft series

NEC Express5800/ft series is a fault tolerant system. It can continue the operation even if a major component fails. NEC Express5800/ft series improves the system availability with the hardware, NEC ESMPRO, and system software functions.

If a major component fails, the NEC ESMPRO fault report function can notify the system Administrator of the occurrence of the fault. In addition, the data viewer of NEC ESMPRO Manager can monitor the system status and also identify the failed component.

NEC ESMPRO provides several maintenance functions such as the update of F/W and BIOS in the NEC Express5800/ft series in the online state (in which the system continues the operation but the components used to update F/W or BIOS is suspended) and the suspension of a specific component.

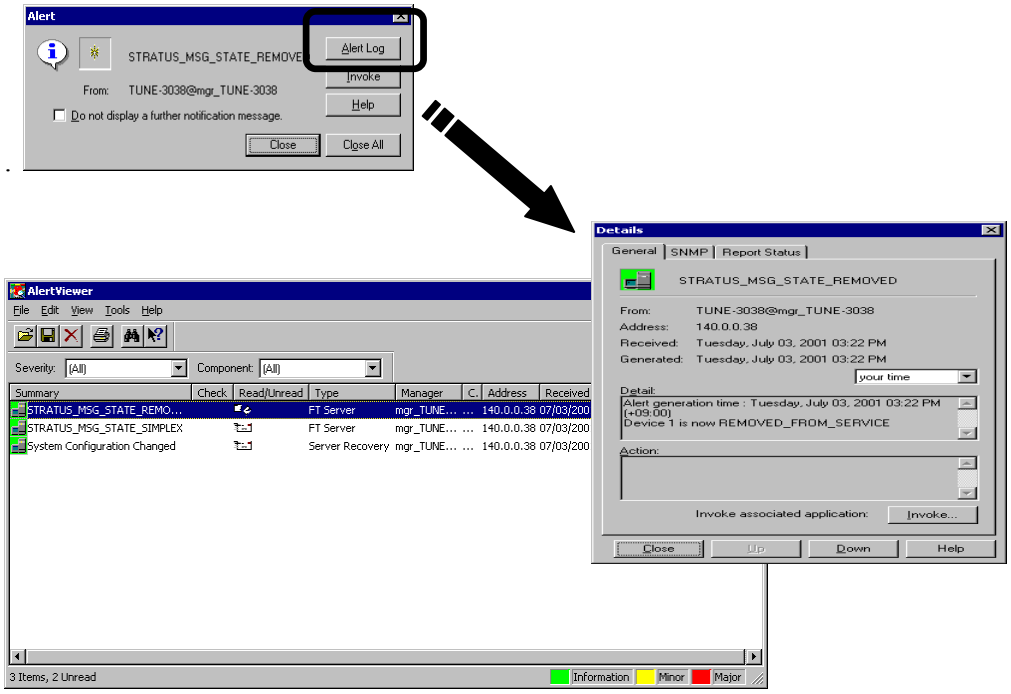
The table below lists the NEC Express5800/ft series management tasks using NEC ESMPRO and system functions.

NEC Express5800/ft series management task	**NEC ESMPRO function or tool (on managed NEC Express5800/ft series)***	**NEC ESMPRO function or tool (on management manager)**
Monitoring of major component states	–	NEC ESMPRO Manager data viewer
Diagnosis and start/stop of major components and F/W update	NEC ESMPRO Agent ft server utility	NEC ESMPRO Manager data viewer
BMC F/W update	NEC ESMPRO Agent BMC F/W update utility	NEC ESMPRO Manager BMC F/W update utility
Confirmation of alert or confirmation of fault occurrence event information	Event Viewer	NEC ESMPRO Manager Alert Viewer
Confirmation of H/W error log	NEC ESMPRO Agent	NEC ESMPRO Manager

* When the administration manager is also the managed NEC Express5800/ft series (or NEC ESMPRO Manager is installed on the managed NEC Express5800/ft series), all functions of the administration manager can be used on the managed NEC Express5800/ft series.

The report of a fault occurrence in the NEC Express5800/ft series (alert) is immediately sent to the NEC ESMPRO Manager. When the NEC ESMPRO Manager receives the alert, a popup message appears.

The alert contains the detailed information of the fault and the proper countermeasures. You can take the appropriate action for the alert.



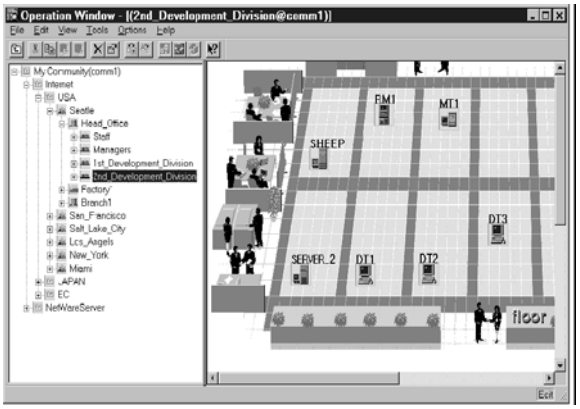
Collective Management of Distributed Servers

The excellent GUI provided by NEC ESMPRO Manager allows servers on a network to be managed collectively. The management screen is designed in the Explorer format to indicate the components in a server hierarchically for effective server management.

NEC ESMPRO Manager manages servers by using the following three types of GUIs.

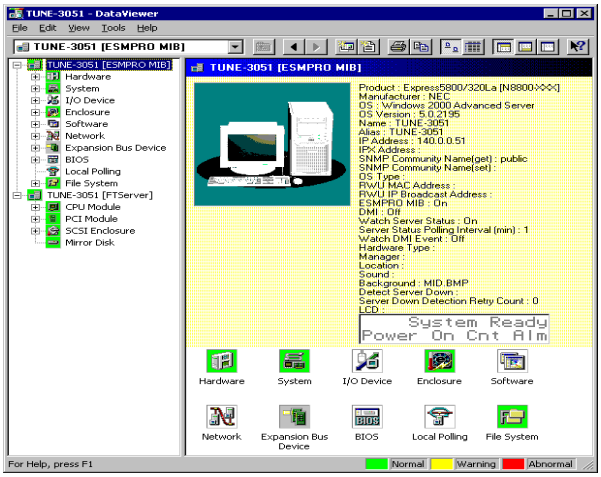
- Operation Window

  The operation window is used to create the map of servers connected to network to manage them. The map can be multi-layered depending on the installation areas, organizations, and objects.



- Data Viewer

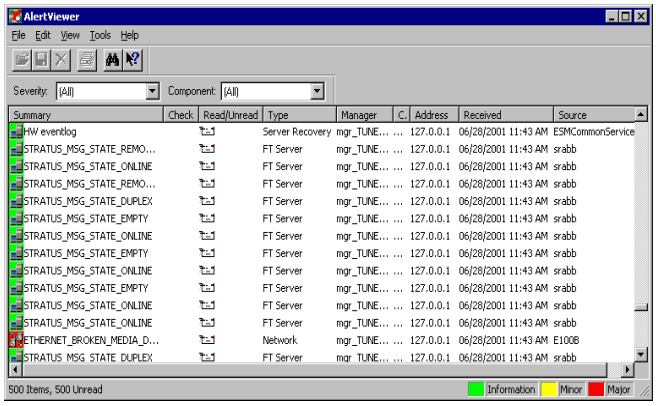
  The data viewer indicates the server source configuration information in the Explorer format. In addition, it changes the status color of the failed server component. This enables you to identify the failed portion.



- Alert Viewer

  The Alert Viewer manages fault reports sent from servers together. A fault occurred in a server is immediately reported to the Alert Viewer.

  The Administrator can recognize all faults on the network instantly.



NEC ESMPRO Agent

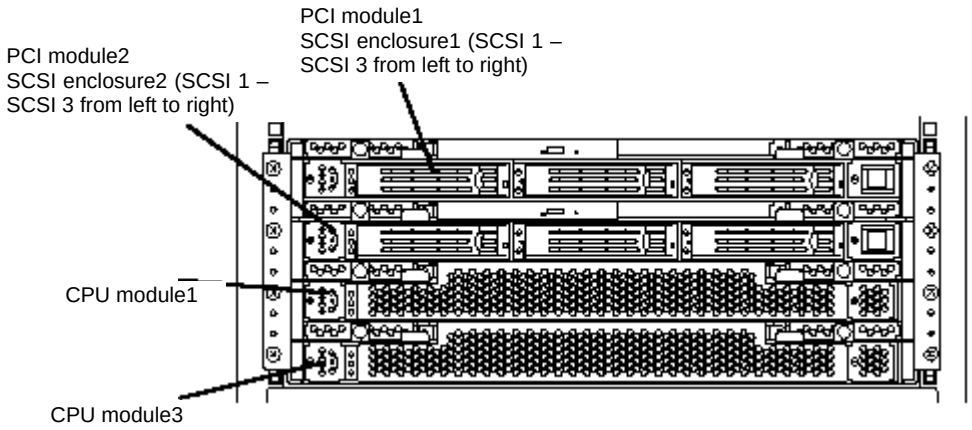
Device ID in Alert Report

Some NEC Express5800/ft series reports use unique device IDs which correspond to the devices listed in the table below as the device identification information.

Device name	Device ID
CPU module 1	0
DIMM1 on CPU module 1	0/0
DIMM2 on CPU module 1	0/1
DIMM3 on CPU module 1	0/2
DIMM4 on CPU module 1	0/3
DIMM5 on CPU module 1	0/4
DIMM6 on CPU module 1	0/5
CPU1 on CPU module 1	0/20
CPU2 on CPU module 1	0/23
Power supply unit on CPU module 1	0/100
CPU module 3	2
DIMM1 on CPU module 3	2/0
DIMM2 on CPU module 3	2/1
DIMM3 on CPU module 3	2/2
DIMM4 on CPU module 3	2/3
DIMM5 on CPU module 3	2/4
DIMM6 on CPU module 3	2/5
CPU1 on CPU module 3	2/20
CPU2 on CPU module 3	2/23
Power supply unit on CPU module 3	2/100
PCI module 1	10
PCI slot 1 on PCI module 1	10/0
PCI slot 2 on PCI module 1	10/1
PCI slot 3 on PCI module 1	10/2
SCSI adapter 1 on PCI module 1	10/5
SCSI bus 1 of SCSI adapter 1 on PCI module 1	10/5/0
SCSI bus 2 of SCSI adapter 1 on PCI module 1	10/5/1
Ethernet Board 1 on PCI module 1(1000BASE)	10/3
Ethernet Board 2 on PCI module 1(100BASE)	10/6
Power supply unit on PCI module 1	10/100
PCI module 2	11
PCI slot 1 on PCI module 2	11/0
PCI slot 2 on PCI module 2	11/1
PCI slot 3 on PCI module 2	11/2
SCSI adapter 1 on PCI module 2	11/5
SCSI bus 1 of SCSI adapter 1 on PCI module 2	11/5/0
SCSI bus 2 of SCSI adapter 1 on PCI module 2	11/5/1
Ethernet Board 1 on PCI module 2(1000BASE)	11/3
Ethernet Board 2 on PCI module 2(100BASE)	11/6
Power supply unit on PCI module 2	11/100
SCSI enclosure 1	10/40
SCSI slot 1 on SCSI enclosure 1	10/40/1
SCSI slot 2 on SCSI enclosure 1	10/40/2
SCSI slot 3 on SCSI enclosure 1	10/40/3
Electronics 1 on SCSI enclosure 1	10/40/120
Power supply unit on SCSI enclosure 1	10/40/100

Device name	Device ID
SCSI enclosure 2	11/40
SCSI slot 1 on SCSI enclosure 2	11/40/1
SCSI slot 2 on SCSI enclosure 2	11/40/2
SCSI slot 3 on SCSI enclosure 2	11/40/3
Electronics 1 on SCSI enclosure 2	11/40/120
Power supply unit on SCSI enclosure 2	11/40/100

The figure below shows the actual locations of the device names displayed on the NEC ESMPRO screen. In the case of the tower model, modules are mounted vertically instead of horizontally.



Supplement

Note the following when using NEC ESMPRO Agent.

Application log registered when system starting

· **Source: About the event of Perflib**
When system is starting, Perflib log may be registered to the application log.
The detailed information about an event log is described on Microsoft Product Support Services. Please check the contents.
- [INFO] Events for Performance Monitor Extensions
http://support.microsoft.com/default.aspx?scid=kb;en-us;226494

- Application Log Events Generated When You Start Performance Counter Query
http://support.microsoft.com/default.aspx?scid=kb;en-us;296187

- Event ID 2003 Warning Message Logged When Loading Performance Counters
http://support.microsoft.com/default.aspx?scid=kb;en-us;267831

Visit the Microsoft Help and Support on regular basis where you can find other information than the above at http://support.microsoft.com/default.aspx?LN=en-us.

Dual registration of event logs

At some types of errors, two event logs may be registered for a single occurrence. (However, in the case of NEC ESMPRO Manager, one log is reported for one occurrence.) Such errors are as follows:

- Temperature error

- Voltage error

- Thermal trip

Maintenance-related Functions

When you want to use maintenance-related functions of the NEC Express5800/ft series, contact your maintenance personnel.

CPU Information

If you select [CPU Module]–[CPU] in the FTServer tree of the data viewer, unknown or incorrect information appears in some information items.

The CPU information can be viewed by selecting [System]–[CPU] in the NEC ESMPRO MIB tree.

Change of Installation States of CPU and PCI Modules

If you dynamically change the configuration of the CPU or PCI module in the relevant system during review of the server information by using the data viewer, the message prompting you to reconstruct the tree of the data viewer will appear. If you click the [Yes] button, the tree is reconstructed in the data viewer to reflect the change of the system configuration on the data viewer.

Clicking the [No] button does not cause the tree to be reconstructed in the data viewer. If so, the information in the data viewer may be different from the current system information because the change of the system configuration is not reflected on the data viewer.

SCSI Slot Information

When the PCI module is detached and you select [SCSI Slot] → [General Information], the displayed “Hardware LED” information may not be correct.

To check the status of SCSI slots, see the string information in the “Status” column.

Impact When Module Status Changes

PCI modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. For example, when the “Status” item of a module changes to “fault,” it may be caused by another module’s error. Therefore, you need to check the status of the other modules based on alert information.

Status Color after Mounting a Hard Disk

When creating a new mirror, the status of the hard disk and its upper component, SCSI enclosure, will continue to change frequently after you mount a hard disk until the mirror is completed. During this process, the status color may turn to abnormal, but when the mirror is created successfully, it will return normal.

LAN Monitoring Report

The LAN monitoring function defines the line status depending on the number of transmission packets and the number of packet errors within a certain period. Thus, the LAN monitoring function may report a line fault or high line load only in a temporary high line impedance state. If a normal state recovery is reported immediately, temporal high line impedance may have occurred thus there is not any problem.

LAN Monitoring Threshold

Because the NEC Express5800/ft series detects hardware faults on the network in the driver level, NEC ESMPRO Agent does not monitor line faults. Thus, the value set for "Line fault occurrence rate" of a [LAN] tab of [NEC ESMPRO Agent properties] in the control panel is not used.

Status during CPU Module Diagnosis

While diagnosing a stopped CPU module, the CPU is no longer in the duplex mode and the CPU and the memory cannot be used. However, the status of [CPU] and [DIMM] displayed under [CPU module] in the FTServer tree on a Data Viewer becomes “Online” and the status color becomes green.

Hard Disk Drives Mirrored By the Rapid Disk Resync (RDR) Function

The Data Viewer's [Mirror Disk] tree of [FTSever] shows a pair of hard disk drives constructing mirroring as one mirror.

Therefore the status of a volume (such as span volume and striping volume) over multiple hard disk drives created by the RDR function may not be displayed correctly. Use the RDR Utility for checking the state of mirrored hard disk drives created by the RDR function.

Fault Time of SCSI Slots

In the NEC Express5800/ft series with ft control software 3.0, "Time of last fault" in [Maintenance] under [SCSI slot] on a Data Viewer is not supported. Therefore the time will not be displayed correctly.

Community Authority

Depending on your OS type or its version, settings for community, SNMP service's security function, are not made, or default settings of authority are different

To enable the remote shutdown and threshold change functions via NEC ESMPRO Manager, make settings of community and set its authority to "READ CREATE" or "READ WRITE."

Monitoring with NEC ESMPRO Manager Ver.4.0 or Earlier

Some items cannot be monitored with NEC ESMPRO Manager of version 4.0 or earlier.

NEC ESMPRO Manager Ver.4.1 is registered in NEC EXPRESSBUILDER CD-ROM. Use the NEC ESMPRO Manager Ver.4.1.

Coexistence with the Oracle products

The installation of the Oracle products may change Startup Type of SNMP Service into "Manual". If so, change the setting back to "Automatic" and set up correctly according to the description of the Oracle product.

Change of SNMP Community

If the security setting of the SNMP Service of a system, where the NEC ESMPRO Agent is installed, is changed from the default "public" to a community name, change the community settings of the NEC ESMPRO Agent, too.

1. Double-click the [NEC ESMPRO Agent] icon in [Control Panel].
2. Select a desired community name from the [SNMP Community] list box in [SNMP Setting] of the [General] sheet.

   The community names to receive SNMP packets from are listed in the [SNMP Community] list box.
3. Click the [OK] button to terminate the operation.

Disk Maintenance While NEC ESMPRO Agent is Running

The following works to disks (hard disk drive or magneto optical) are not allowed while NEC ESMPRO Agent is running;

- To format or delete a partition by Disk Administrator or by other means.
- To request programmatically to remove media from removable disks such as MO, Zip and PD.

1. Connect the machine using Web UI.
2. Click the [Maintenance].
3. Click the [Terminal Service]
4. Log on as an administrator
5. Select the [Start] – [Settings] – [Control Panel]
6. Open the [Service]
7. Select a service named “ESMCommonService”, and click the [Stop].
8. Confirm that “ESMCommonService” stopped, and close the [Service].
9. Do the disk-related works.
10. Open the [Service] again, select “ESMCommonService” and click the [Start].
11. Confirm that “ESMCommonService” is active and close the [Service] and [Control Panel].

About the warning event of CPU load Monitoring

If NEC ESMPRO Agent cannot get performance information from the OS due to a temporary resource shortage or high load ratio on the system, it will record the following event log. However, there is no real problem on operation. (In the description, Y and X represent alphanumeric characters.)

Source: ESMCpuPerf

Event ID: 9005

Description: Cannot get system performance information now (YYYY Code=xxxx).

If NEC ESMPRO Agent cannot get information, it will treat the load ratio as 0%. So, if NEC ESMPRO Agent cannot get information continuously, the CPU load ratio may appear lower than the actual value.

Connection with Hard Disk Drive

The preventive hard disk drive maintenance function may not work properly when a hard disk drive which was used in a system where NEC ESMPRO Agent is installed is connected to other systems. Make sure not to connect such hard disk drives.

Change Settings of File System Monitoring Function

New settings in thresholds of monitoring interval and free space monitoring are not reflected immediately after they are changed. They are reflected at the next monitoring interval of monitoring service.

CPU Load Ratio of SNMP Service (snmp.exe)

While monitoring the server from NEC ESMPRO Manager, the CPU load ratio of SNMP Service on the NEC ESMPRO Agent side may increase at every monitoring interval (default: 1 minute).

NEC ESMPRO Manager and NEC ESMPRO Agent exchange information through SNMP Service. If the server status monitoring by NEC ESMPRO Manager is on (default: ON), NEC ESMPRO Manager regularly issues a request to NEC ESMPRO Agent to get the current status of the server. In response, NEC ESMPRO Agent checks the status of the server. As a result, the CPU load ratio of SNMP Service increases temporarily.

If you have trouble of terminating a movie player application, turn off the server status monitoring by NEC ESMPRO Manager or extend the monitoring interval.

Current Status of Temperature, Voltage and Fan Sensors

Some modes are equipped with temperature/voltage/fan sensors that do not have information on status, current values, rpm, threshold etc. Therefore, if you view such a sensor on NEC ESMPRO Manager, it may be displayed as follows:

- The status becomes “Unknown” (grayed out) on the data viewer.
- The current value or rpm becomes “Unknown” on data viewer.
- The status is grayed out on the Web component data viewer.
- The current value or rpm becomes blank on the Web component data viewer.

Even if the sensor is displayed like stated above, it is monitoring the server.

Actions to Take When Temperature/Voltage Error Occurs on CPU/PCI Modules

At the time when a temperature or voltage error occurs on CPU/PCI module, necessary actions will differ depending on their status as shown below. You can check the status of each module from the data viewer of NEC ESMPRO Manager or ft server utility.

Status	Actions
Duplex	Stop the failed CPU/PCI module.
Simplex	Shut down the system.
Other than duplex or simplex	No action is required.

TIPS:

- If the status is “Empty,” the module is not mounted. Sensor monitoring is not conducted.
- If disks are mounted on PCI modules, the status of both modules is “Simplex” while the disks are mirrored. Temperature or voltage error occurring during disk mirroring will result in the

system to shut down.

Total Status of the PCI Module

When each module's status is simplex, the total status of the PCI module displayed on the Data Viewer is yellow (warning) and the status will be reflected to the server status. The ft control software 3.0 or later does not display the information on Ethernet or SCSI adapter on the tree of the Data Viewer. If an error occurs on an Ethernet or SCSI adapter, view the alert reports.

CPU Information

In [CPU Information] of Data Viewer's system tree, the external clock is listed as "Unknown."

When [ft Server] Tree Appears on Date Viewer in an Incorrect Manner

If you open a Data Viewer immediately after the system starts up, the tree or the state of a Data Viewer may not be displayed correctly due to high load of the system. In about 20 minutes after the system startup, when a pop-up message (below) which prompt you to reconstruct a Data Viewer appears, click [OK]. The Data Viewer will be reconstructed and the tree and the status will be displayed correctly.

> Data Viewer
>
> The system configuration of the host may have been changed. Do you wish to reconstruct the tree?

Floppy Disk Drive Name

After unplugging and plugging the PCI module of the primary side, the floppy disk drive name of [I/O Device] on Data Viewer may be different from the name that is recognized by the OS.

(Example: drive name on Data Viewer: "A"

drive name recognized by the OS: "B")

Check the floppy disk drive name on Explorer.

Floppy Disk Drive Information

If you add or delete floppy disk drive connected with USB while the system is running, the drive information under the [I/O Device] in the data viewer will be updated at the next system startup.

Displayed BIOS Data Is Incorrect

BIOS additional data may not be displayed properly in [BIOS Information] of a CPU Module of the ft server utility or in [Ft Server] – [CPU Module] – [Individual CPU Module] – [General] – [BIOS Information] of Data Viewer.

In this case, see the data in [ESMMIB] – [BIOS] of Data Viewer.

Ethernet Adapters You Do Not Use

If an Ethernet adapter is not used (not connected to cable), set it to “Disable” in [Network Connections] from Control Panel. If an Ethernet adapter you are about to disable has dual LAN settings (AFT function), remove the dual LAN settings before disable it.

Monitoring in Sleep State

NEC ESMPRO Manager cannot monitor the NEC ESMPRO Agent machine in the sleep state (system standby or system halt state).

While NEC ESMPRO Manager monitors server shutdown, the relevant NEC ESMPRO Agent machine may be entered into the sleep state. If so, the report "server access disabled" is issued and the status color of the server icon becomes gray. This cannot indicate whether the NEC ESMPRO Agent machine is shut down or entered into the sleep state. Keep these in mind when operating the system where systems to be monitored may enter the sleep state.

Printer Information’s Available Time:

When you add a new printer, install its driver and make its settings, if you do not make settings for the available time from Add Printer Wizard, the printer’s available time (From and To) in [Printers and Faxes] are [00:00], on the other hand, Manager’s time are [9:00]. To display them properly, make the settings of printer from [Printers and Faxes]. The procedures are as follows;

1. Start [Printers and Faxes], and open the printer properties you want to make settings for. (Select the [Printers and Faxes], right-click and select [Properties].)
2. Select the [Advanced] tab.
3. Enter values in the available time (From and To), and click [OK] in the [Advanced] and [Properties] dialog boxes.

Now, you can see the correct information from Manager, too.

Hang of SNMP Service

SNMP Service has a module called “SNMP Extended Agent.” This module may be registered when you install some software that uses SNMP Service.

If you start SNMP Service, SNMP Extended Agent is also loaded at the initialization. However, if the initialization is not completed within a specified period, SNMP Service will hang.

It may take time to complete the initialization due to temporary high load on the system. In this case, wait for the system load become low enough before restarting SNMP Service.

NEC ESMPRO Manager

To monitor and manage a computer, on which NEC ESMPRO Agent is installed, with a management PC online, use NEC ESMPRO Manager that is bundled with the product.

For detailed procedures of installation and setting, see online documents or NEC ESMPRO Online Help.

TIPS: Online documents provide cautions and information for using NEC ESMPRO Manager. See *NEC ESMPRO Manager User's Guide* in the NEC EXPRESSBUILDER CD-ROM.

Monitoring by Use of Data Viewer

To monitor the state of the NEC Express5800/ft series on a management computer with installation of NEC ESMPRO Manager, the data viewer is used. If you click each of the modules and items to be checked sequentially on the tree view in the Windows Explorer format, the data viewer indicates their states on the right side of the screen.

You can manage the status on a Web browser using Web component functions of NEC ESMPRO Manager. For details, see Help on Web Component.

This section describes the tree structure and displayed screens in the data viewer.

To make the data viewer indicate the state of each module and those of the components on it, select the server to be monitored from NEC ESMPRO Manager to start the data viewer (in the following description, the start procedure of the data viewer is omitted).

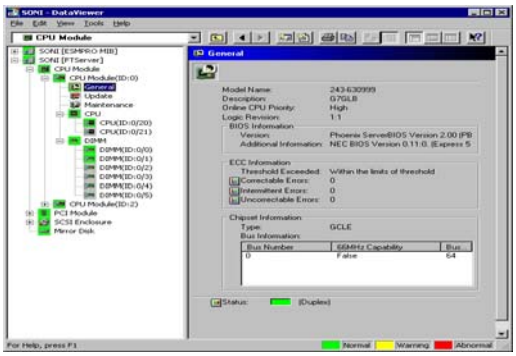
Monitoring CPU Module

To monitor the CPU modules and the components on the CPU module, see the [CPU Module] tree. To see the information on the [CPU Module] tree, select the target CPU module from [CPU Module] in the [FTServer] tree.

You can see the following information on the modules and the components on the CPU modules in the [CPU Module] tree.

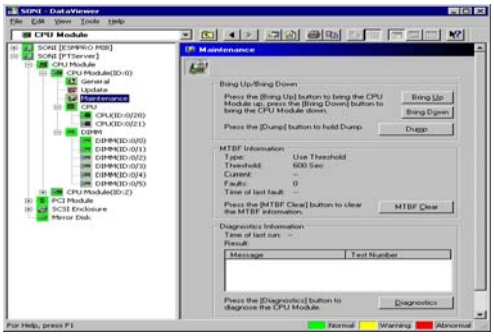
- General

  Allows the configuration and other information on the CPU modules to be viewed.



- Maintenance

  Allows the start/stop, MTBF information clear, dump acquisition, and diagnosis of the CPU modules to be provided. See "Maintenance of NEC Express5800/ft series" described later for the start/stop and MTBF information clear of the CPU modules.

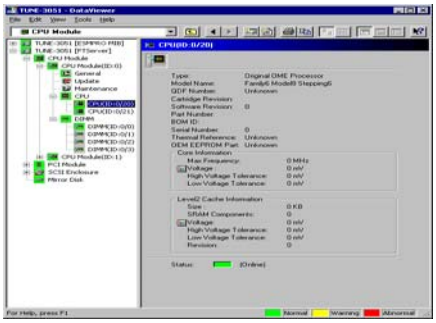


- Update

  Allows the device identification information of the CPU modules to be viewed and BIOS of the CPU modules to be updated. See "Maintenance of NEC Express5800/ft series" described later for the update of BIOS of the CPU modules. The detailed device identification information can be checked by selecting [ESMPRO] tree→[Hardware] tree→[Field Replaceable Unit] tree.

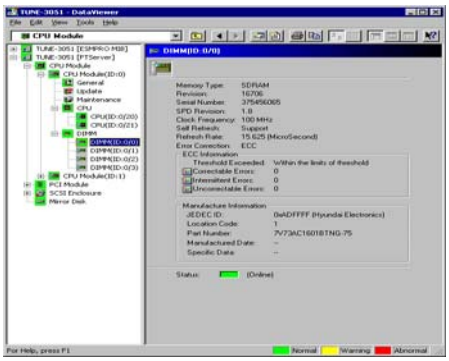
- CPU

  Allows the information of the CPU on the CPU modules to be viewed.



- DIMM

  Allows the information of DIMM on the CPU modules to be viewed.



Monitoring PCI Module

To monitor the PCI modules and the components on the PCI modules, refer to the [PCI Module] tree. To see the information on the [PCI Module] tree, select the target PCI module from [PCI Module] in the [FTServer] tree.

You can see the following information on the PCI modules and the components on the PCI modules of the [PCI Module] tree.

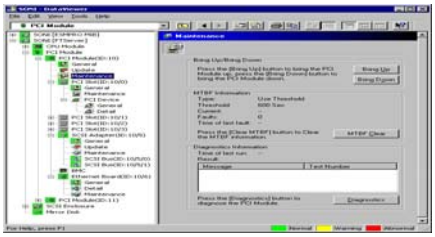
(This section describes the general information screens of the PCI modules. The components on the PCI modules are described later.)

- General

  Allows the configuration and other information of the PCI modules to be viewed.

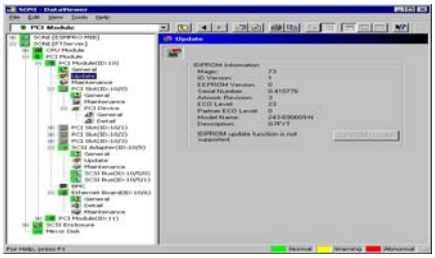
- Maintenance

  Allows the start/stop, MTBF information clear, and diagnosis of the PCI modules to be provided. See "Maintenance of NEC Express5800/ft series" described later for the start/stop and MTBF information clear of the CPU modules.



- Update

  Allows the device identification information of the PCI modules to be viewed. The detailed device identification information can be checked by selecting [ESMPRO] tree→[Hardware] tree→[Field Replaceable Unit] tree.



Monitoring PCI Slots and Devices on PCI Module

To monitor the PCI slots and devices on the PCI modules, see the [PCI slot] tree. To see the information on the [PCI slot] tree, select [PCI Module]→[PCI module (containing PCI slot to be seen)]→[PCI slot] of the [FTServer] tree.

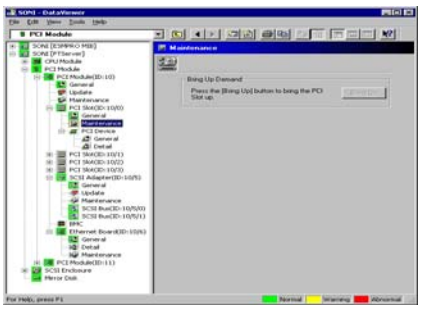
You can see the following information on the PCI slot and the devices on the PCI slot in the [PCI slot] tree.

- General

  Allows the PCI slot configuration information to be viewed.

- Maintenance

  Allows a device on the PCI slot to be started. This function is not supported in the current version.

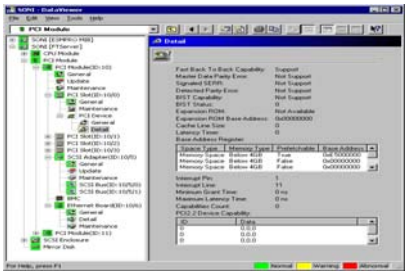


- PCI Device – General

  Allows the information of devices on the PCI slot to be viewed.

- PCI Device – Detailed information

  Allows the detailed information of a device on the PCI slot to be viewed.



- PCI Bridge – General

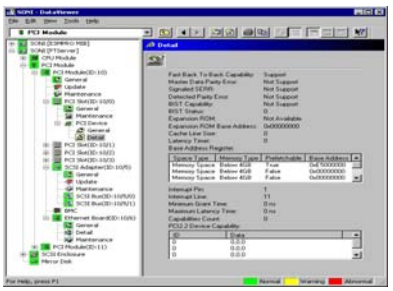
  Allows the information of bridges on the PCI bus to be viewed

PCI Bridge – Bus information

Allows the bus information of a bridge on the PCI bus to be viewed.

- PCI Bridge – Detailed information

  Allows the detailed information of a bridge on the PCI bus to be viewed.



Monitoring SCSI Enclosure

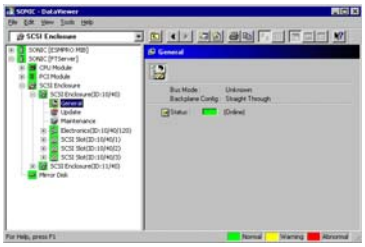
To monitor the SCSI enclosure, see the [SCSI enclosure] tree. To see the information on the [SCSI enclosure] tree, select [SCSI enclosure] of the [FTServer] tree.

You can see the following information of the SCSI enclosure from the [SCSI enclosure] tree.

- General

  Allows the configuration and other information of the SCSI enclosure to be viewed.

IMPORTANT: You need to be aware that PCI modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. For details, see “Impact When Module Status Changes” described above.



- Maintenance

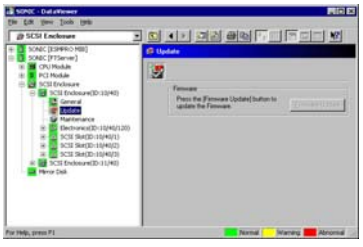
  Allows the MTBF information of the SCSI adapter to be viewed or cleared.

  See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the SCSI enclosure.

- Update

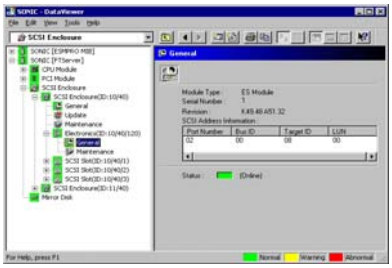
  Allows the firmware of the SCSI enclosure to be updated.

  However, this function is not supported in the current version.



- Electronics – General

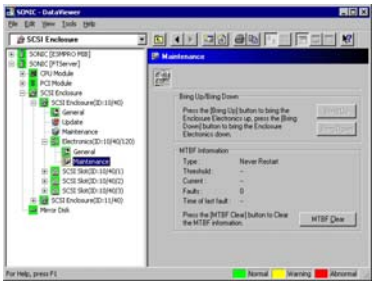
  Allows the configuration and other information of the SCSI enclosure electronics to be viewed.



- Electronics – Maintenance

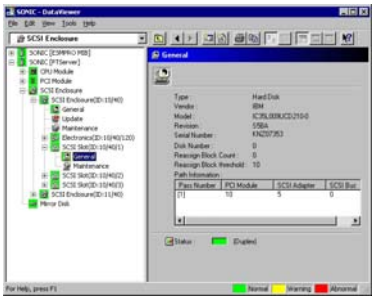
  Allows the MTBF information of the SCSI enclosure electronics to be viewed or cleared.

  See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the SCSI electronics enclosure.



- SCSI Slot – General

  Allows the configuration and other information of the SCSI slot to be viewed.

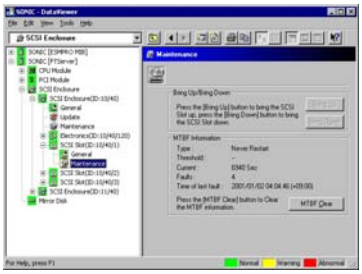


IMPORTANT: You need to be aware of the status of hard disk during the mirror creation. For details, see “Status Color after Mounting a Hard Disk” in “Supplement”.

- SCSI Slot – Maintenance

  Allows the MTBF information of the SCSI slot to be viewed or cleared.

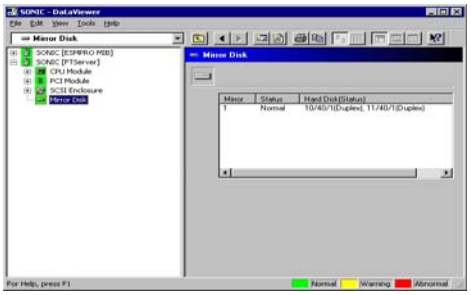
  See "Maintenance of NEC Express5800/ft series" described later for clearing the MTBF information on the SCSI slot.



Monitoring Mirror Disk

To monitor the mirror disk components, see the [Mirror Disk] tree. To view information on [Mirror Disk] tree, select [Mirror Disk] under [FTServer] tree.

You can see the redundancy status of the mirrors and the device IDs of the SCSI slots into which these hard disk components are connected.



[Mirror Disk]

Monitoring Hard Disk

To monitor the hard disks and detect disk failures at an early stage, use the NEC ESMPRO Manager and Agent. You can see configurations and information of hard disk in the Data Viewer.

Monitoring Operations

This section describes how to maintain hard disks.

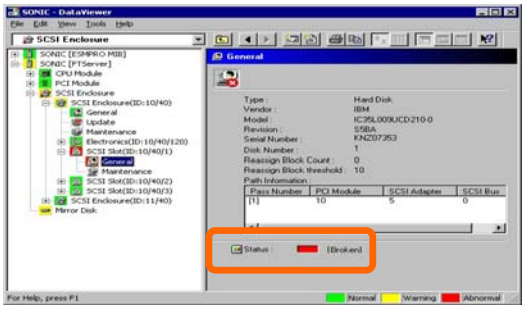
1. Confirmation of hard disk failure

If NEC ESMPRO Agent detects some problem with a hard disk, it will report an alert of the problem to NEC ESMPRO Manager. Please check the alert viewer in the manager regularly.

Ex. If a hard disk in SCSI Slot (10/40/1) is broken, agent reports the following alert.

```
Device 10/40/1 is now BROKEN.
```

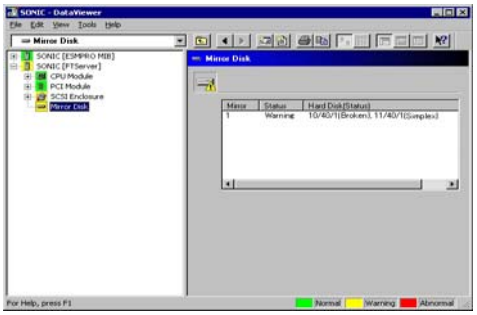
And manager displays the problem information of the hard disk in the [SCSI enclosure] → [SCSI Slot] → [General] of the data viewer.



[SCSI Slot] → [General]

2. Confirmation of mirror status

To check the redundancy status of the failed mirror disk, open [Mirror Disk] screen under [FTServer]. On this screen, you can check the redundancy status of the mirror and the status of the mirrored hard disks.



[Mirror Disk]

IMPORTANT:

The mirroring redundancy status will change depending on the status of the two hard disks that make up a mirror as follows:

Status of hard disk 1	Status of hard disk 2	Status of mirror volume
Duplex	Duplex	Normal
	Simplex	-
	Others	Warning
Simplex	Duplex	-
	Simplex	Normal
	Others	Warning
Others	Duplex	Warning
	Simplex	Warning
	Others	-

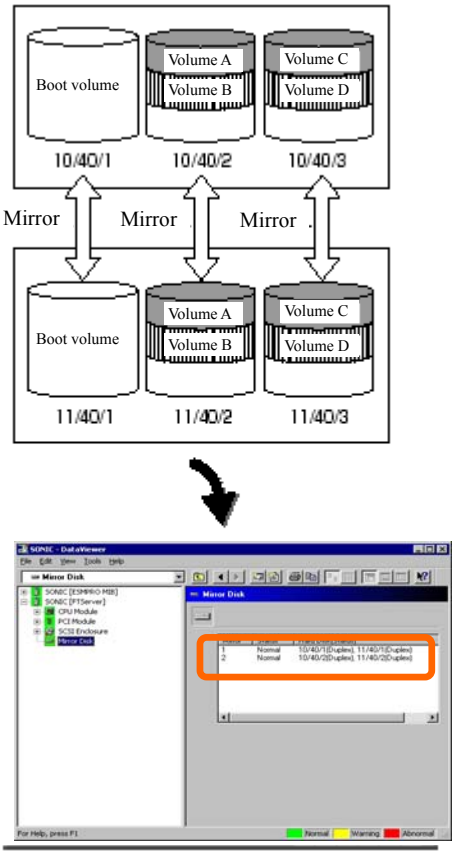
"-": No status is shown.

TIPS: Unless the hard disks make up a mirror, the Mirror Disk screen does not show any information.

IMPORTANT:

The Mirror Disk screen shows a pair of two hard disks as a mirror. Disk pairs are shown in the same manner even if a few volumes are created within a single disk or one volume spans a few disks (span volume).

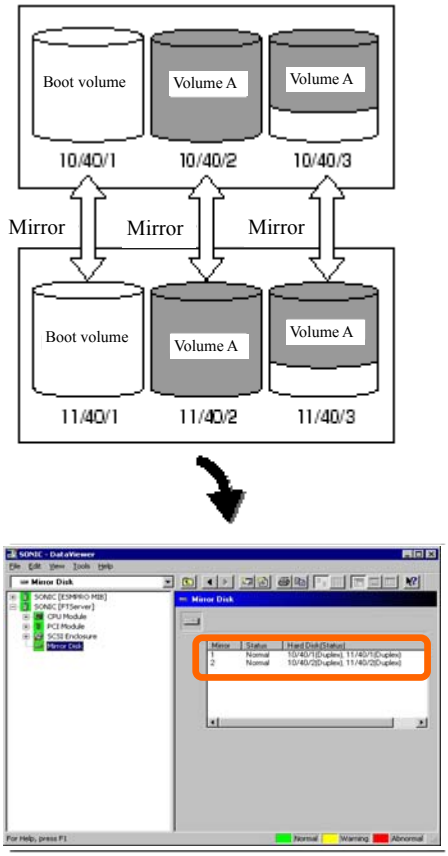
- A few volumes are created within a single disk:



The screen shows information on a pair of hard disks that make up a mirror. It does not show information based on volumes (ex. Volume A, Volume B).

IMPORTANT:

- A volume that spans a few hard disks is mirrored (mirror volume, span volume)



Even if a volume consists of a few hard disks, the screen shows information on each pair of hard disks that make up a mirror. In the above example, Volume A is shown in Mirror 2 (10/40/2, 11/40/2) and Mirror 3 (10/40/3, 11/40/3), separately. When a hard disk fails, that status will be reflected in both mirrors.

3. Recovery from a hard disk failure

If a hard disk breaks, the broken disk must be replaced immediately. This section describes alert reports and status shown by the Data Viewer while disks are replaced to restore mirroring.

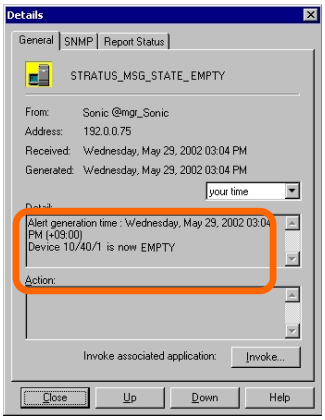
(1) Detecting problem of a hard disk

See [1. Confirm of hard disk failure] above.

(2) Removing the hard disk

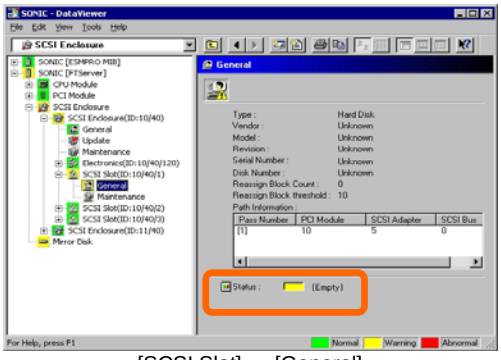
Disconnect the hard disk with the problem. At this time, NEC ESMPRO Agent reports the following alert to manager. And icons related to the hard disk with problem change the state of warning in the data viewer.

Since the hard disk has been removed, the status of the SCSI slot will be “EMPTY.”



TIPS: You can identify the new hard disk by DevicePathID (ex. 10/40/1).

When one hard disk with problem was disconnected, SCSI slot changes the status to "Warning".

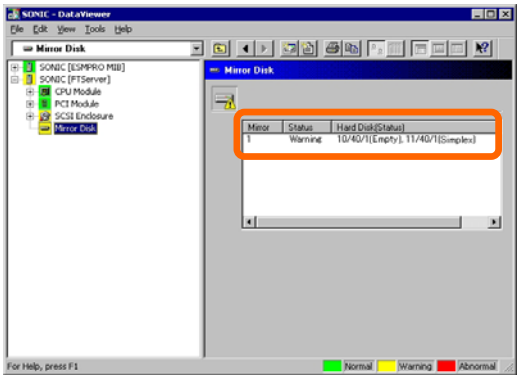


[SCSI Slot] → [General]

IMPORTANT: The status color of the SCSI slot differs depending on the connection of mirrored hard disks:

- If one of the mirrored disks was removed: Warning
- If both of the mirrored disks were removed: Gray

Also, at this time, the redundant status of mirrored disks is changed to "Warning".

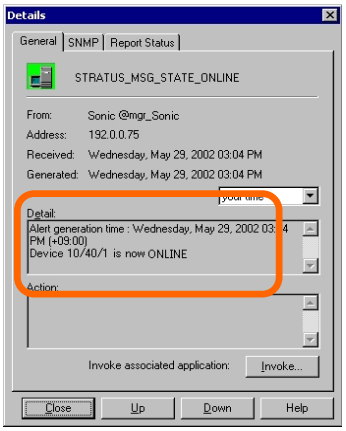


[Mirror Disk]

(3) Connect a new hard disk

Next, connect a new hard disk to the same SCSI Slot. At this time, NEC ESMPRO Agent reports the following alert to manager. And icons related to the hard disk are changed to the state of normal in the data viewer.

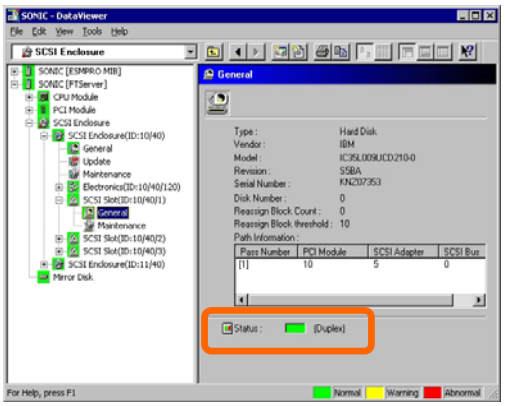
When the hard disk is connected, SCSI Slot changes the status to "Normal".



[Alert report]

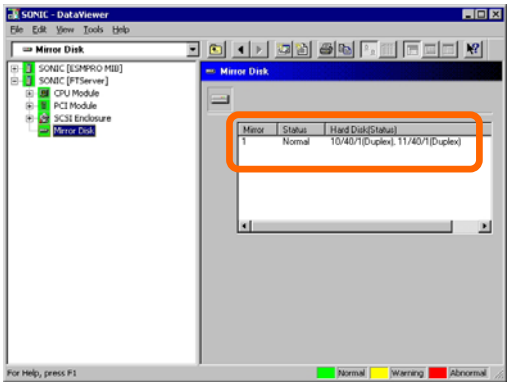
TIPS: You can identify the new hard disk by DevicePathID (ex. 10/40/1).

When the hard disk is connected, SCSI Slot changes the status to "Normal".



[SCSI Slot] → [General]

Also, at this time, the state of the mirrored disks changes to "Normal".



[Mirror Disk]

Maintenance of NEC Express5800/ft series

NEC Express5800/ft series maintenance can be done in two ways; one is to use NEC ESMPRO Manager for remote maintenance and the other is to use the NEC ESMPRO Agent ft server utility on the NEC Express5800/ft series for local maintenance.

TIPS: To start the NEC ESMPRO Agent ft server utility installed in the NEC Express5800/ft series, select the items as follows:

Start Menu→[Programs]→[NEC ESMPRO Agent]→[ft server utility]

The maintenance functions that can be executed from NEC ESMPRO include three types, those common to all components, those specific to particular components, and general system settings.

The maintenance functions common to all components are operated in the same way basically (the operation procedure and typical examples of screen images are described below).

The table below lists the maintenance functions common to all components.

Component	Start		Stop		MTBF clear		Diag-nosis		F/W update	
	R	L	R	L	R	L	R	L	R	L
CPU module	√	√	√	√	√	√	√	√	√	√
PCI module	√	√	√	√	√	√	√	√	–	–
PCI slot	–	–	–	–	–	–	–	–	–	–
Ethernet adapter	–	–	–	–	–	√	–	–	–	–
SCSI adapter	–	–	–	–	–	√	–	–	–	–
SCSI enclosure	–	–	–	–	√	√	–	–	–	–
SCSI electronics	–	–	–	–	√	√	–	–	–	–
SCSI slot	–	–	–	–	√	√	–	–	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

In ft server utility, the MTBF clear of SCSI adapter and Ethernet cannot be performed to onboard devices.

The table below shows the component-specific maintenance functions executable from NEC ESMPRO.

Component	Dump acquisition		Dump acquisition during system operation		Board switch	
	R	L	R	L	R	L
CPU module	–	√	√	√	√	√

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

Component	Bus reset		Change of primary SCSI bus	
	R	L	R	L
SCSI bus	–	√	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

Component	BMC firmware update	
	R	L
BMC	√	√

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

The table below shows the support of the whole system setup functions.

Component	Quick dump		Auto firmware update		Auto module start	
	R	L	R	L	R	L
Whole system	–	√	–	√	–	√

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

The table below shows the support of the preventive disk maintenance (S.M.A.R.T.) setup function.

Component	Preventive disk maintenance (S.M.A.R.T.) setup	
	R	L
SCSI disk	–	–

R: Remote. Executable from remote management PC by using NEC ESMPRO Manager
L: Local. Executable on local server by using ft server utility
√: Support
–: Not support

Start and Stop of Components

To start or stop a component with NEC ESMPRO Manager, use the [Maintenance] tree of the component in the [FTServer] tree of the data viewer. Open the tree of the component to be started or stopped and select the [Maintenance] tree.

To start or stop a component with the ft server utility, use the utility screen of the component.

The table below shows the potential cases in which a component is to be started or stopped.

Compo-nent	Start		Stop	
	Remote	**Local**	**Remote**	**Local**
CPU Module	When the cause of down is reviewed and the system is restarted in module down state. Executable in any of the following module states (this can be viewed on manager screen): • Removed • Broken • Shot • Firmware Update Complete • Diagnostics Passed	When the cause of down is reviewed and the system is restarted in module down state. Executable in the following module state: • When the status LED 1 is red and the status LED 2 is off Only the status LED 1 illuminates red when the module is in one of the following states: • Removed • Broken • Shot • Firmware Update Complete • Diagnostics Passed	When system is stopped forcibly due to replacement or malfunction of module. Executable in the following module state (this can be viewed on manager screen): • Duplex	When system is stopped forcibly due to replacement or malfunction of module. Executable in the following module state: • Only the green LED is on and in redundant configuration state The both green LEDs are on when the module is in the following state: • Duplex
PCI Module	Same as above	Same as above	Same as above	Same as above
SCSI Slot	–	–	–	–

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

IMPORTANT: PCI modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. You need to be aware of this, for example, when you replace a PCI module. For details, see “Impact When Module Status Changes” described above.

Procedure in NEC ESMPRO Manager

Start

1. Select the target component in the [FTServer] tree.
2. Check the current state with the "Status" display on the target component screen.
3. Click the [Bring Up] button in the [Maintenance] screen for the target component.

   A certain time is required for the start.

   The start result can be confirmed by "State" on the target component screen. The result of the start operation is reported by the NEC Express5800/ft series as an alert.

Stop

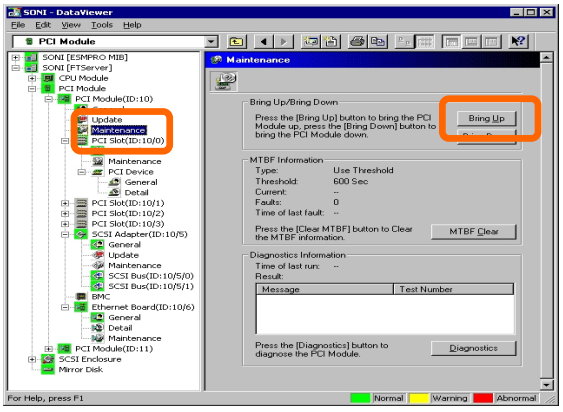
Perform the procedure below before replacing a component.

1. Select the target component in the [FTServer] tree.
2. Check the current state with the "State" display on the target component screen.
3. Click the [Bring Down] button in the [Maintenance] screen for the target component.

   A certain time is required for the stop.

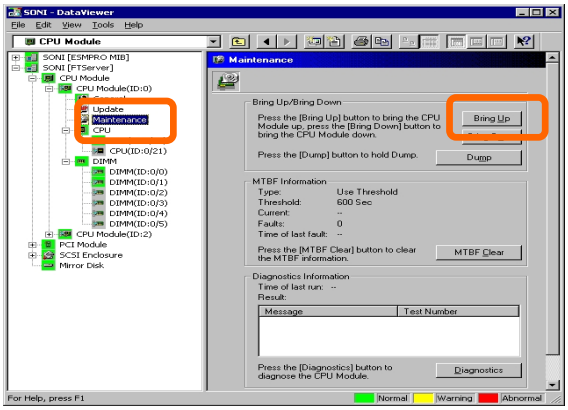
   The stop result can be confirmed by "State" on the target component screen. The result of the stop operation is reported by the NEC Express5800/ft series as an alert.

Sample screen of NEC ESMPRO Manager 1



[Maintenance] screen of PCI module
[PCI Module] – [PCI Module] – [Maintenance]

Sample screen of NEC ESMPRO Manager 2



[Maintenance] screen of CPU module
[CPU Module] – [CPU Module] – [Maintenance]

Procedure in the ft server utility

Start

1. Select the target component by using the ft server utility.
2. Check the current state of the target component with the LEDs.
3. Click the [Up] button of the target component.

   A certain time is required for the start.

   The start result can be confirmed by the LEDs on the target component. The result of the start operation is registered in the event log.

Stop

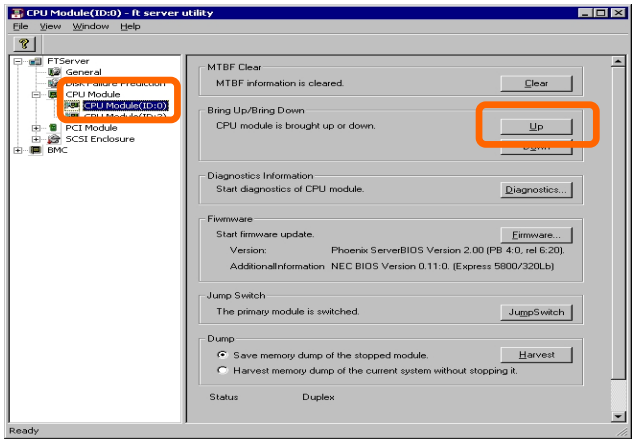
Stop before replacing components.

1. Select the target component by using the ft server utility.
2. Check the current state of the target component with the LEDs.
3. Click the [Down] button of the target component.

   A certain time is required for the start.

   The start result can be confirmed by the LEDs on the target component. The result of the start operation is registered in the event log.

Sample screen of ft server utility



Check and Clear of MTBF Information

The MTBF information of a component can be viewed or cleared (initialized).

NEC Express5800/ft series manages the MTBF (mean time between failure) of each component. If a fault occurs in a component, the NEC Express5800/ft series calculates the MTBF of the component again. If the calculated value is lower than the pre-defined threshold, the NEC Express5800/ft series disables the component to be used.
Contact your maintenance personnel if such a symptom as above occurs.

IMPORTANT: A disabled component with the MTBF lower than the threshold can be forcibly enabled by clearing the MTBF. However, contact your maintenance personnel for the forced use of such a component.

To clear the MTBF information of a component with NEC ESMPRO Manager, use the [Maintenance] tree of the component of the [FTServer] tree of the data viewer. Open the tree of the component whose MTBF information is to be cleared and select the [Maintenance] tree.

To clear the MTBF information of a component with the ft server utility, use the utility screen of the component. The table below shows the potential cases in which the MTBF information of a component is to be cleared. Contact your maintenance personnel for clearing MTBF information.

Component	MTBF clear	
	Remote	Local
CPU Module	To start the module forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module. Executable in the following module state (this can be viewed on manager screen): • Broken MTBF is lower than the threshold.	To start the module forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module. Executable in the following module state: • Only the red LED is on and the event indicating that MTBF is lower than the threshold is registered in the event log.
PCI Module	Same as above	Same as above
Ethernet Adapter	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): Broken MTBF is lower than the threshold. You can clear MTBF information by unplugging and plugging the live wire of the PCI module.	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): • Only the red LED is on and the event indicating that MTBF is lower than the threshold is registered in the event log. You can clear MTBF information by unplugging and plugging the live wire of the PCI module.
SCSI Adapter	-	Same as above

Component	MTBF clear	
	Remote	**Local**
SCSI Enclosure	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): Broken MTBF is lower than the threshold.	To start the module/component forcibly after replacing a module or if MTBF became lower than the threshold due to malfunction and disabled the module/component. Executable in the following module state (this can be viewed on manager screen): Only the red LED is on and the event indicating that MTBF is lower than the threshold is registered in the event log.
SCSI Electronics	Same as above	Same as above
SCSI Slot	Same as above	Same as above

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

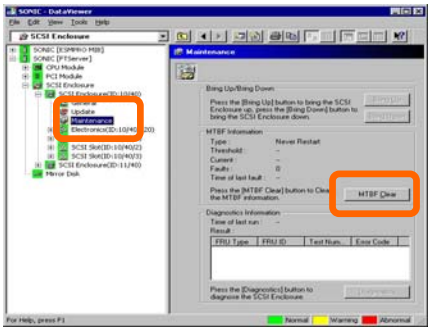
Procedure in NEC ESMPRO Manager

Perform the procedure below before replacement of a component.

1. Select the target component in the [FTServer] tree.
2. Check the current state with the "State" display on the target component screen.
3. Click the [Clear] button in the [MTBF Clear] of the target component.

   The MTBF clearing result can be confirmed by "State" on the target component screen. The result of the MTBF clearing operation is reported by the NEC Express5800/ft series as an alert.
4. Start the component.

Sample screen of NEC ESMPRO Manager



[Maintenance] screen of SCSI enclosure
[SCSI Enclosure] – [Maintenance]

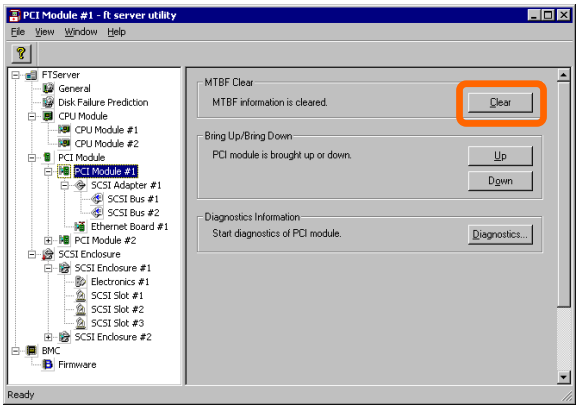
Procedure in the ft server utility

Perform the procedure below before replacement of a component.

1. Select the target component by using the ft server utility.
2. Check the current state of the target component with the LEDs and event log.
3. Click the [Clear] button in [MTBF Clear] of the target component.

   The MTBF clearing result can be confirmed by the LEDs on the target component. The result of the MTBF clearing operation is registered in the event log.
4. Start the component.

Sample screen of ft server utility



[PCI Module]

Diagnostics

The NEC Express5800/ft series provides the self-check diagnosis function for some components. If a fault occurs in a component, the NEC Express5800/ft series can diagnose the component to detect the fault.

To diagnose a component with the NEC ESMPRO Manager, use the [Maintenance] tree of the component in the data viewer. Open the tree of the component to be diagnosed and select the [Maintenance] tree.

To diagnose of a component with the ft server utility, use the utility screen of the component.

The table below shows the potential cases in which a component is to be diagnosed.

Component	Diagnosis	
	Remote	**Local**
CPU Module	When a phenomenon causing the module to be down occurs or a phenomenon supposed to be a malfunction occurs. Executable in any of the following module states (this can be viewed on manager screen): • Removed • Broken • Shot • Firmware Update Complete To diagnose the module under operation, bring down the module before the diagnosis.	When a phenomenon causing the module to be down occurs or a phenomenon supposed to be a malfunction occurs. Executable in any of the following module states: • When the status LED 1 is red and the status LED 2 is off Only the status LED 1 illuminates red when the module is in one of the following states: • Removed • Broken • Shot • Firmware Update Complete (no fault found by diagnosis) To diagnose the module under operation, bring down the module before the diagnosis.
PCI Module	Same as above	Same as above

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

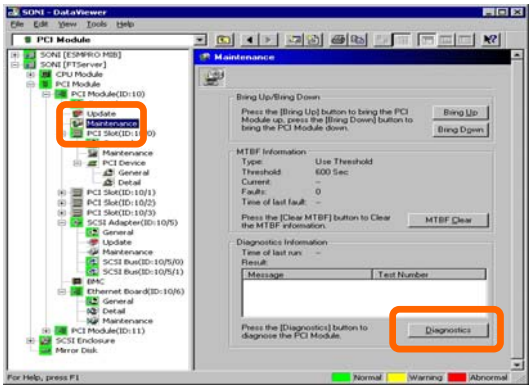
Procedure in NEC ESMPRO Manager

1. Select the target component in the [FTServer] tree.
2. Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.
3. Click the [Diagnostics] button in the [Maintenance] screen for the target component.

   The diagnosis result can be confirmed by "Result" of the diagnosis on the target component screen. The result of the diagnosis is reported by the NEC Express5800/ft series as an alert.

   The result of diagnosis executed last is displayed in the [Diagnosis Information] column. In addition, if a fault is detected by the result of the diagnosis, the state of the [General Information] tree of the component is changed.

Sample screen of NEC ESMPRO Manager



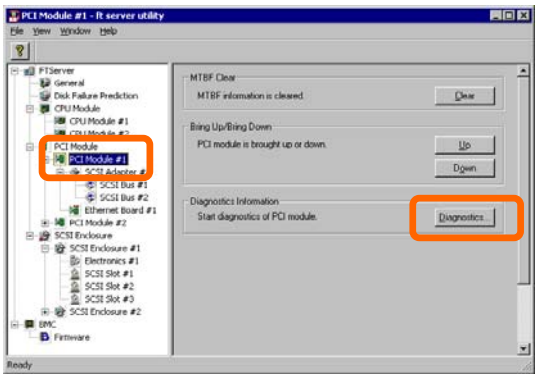
[Maintenance] screen of PCI module
[PCI Module] – [Maintenance]

Procedure in the ft server utility

1. Select the target component by using the ft server utility.
2. Check the current state of the target component with the LEDs. If the component is operating, stop the component.
3. Click the [Diagnostics] button in the [Diagnosis Information] on the target component.

   The diagnosis result can be confirmed by the LEDs on the target component. The result of the diagnosis is registered in the event log.
4. Start the component.

Sample screen of ft server utility



[PCI Module]

Firmware Update

NEC Express5800/ft series can update firmware (including BIOS) if some hardware components operate in the online state (in which the system continues the operation but the component trying to update firmware or BIOS is stopped).

To update firmware with NEC ESMPRO Manager, use the [Update] tree of the component in the data viewer. Open the tree of the component for which firmware is updated and select the [Update] tree.

To update the firmware of a component with the ft server utility, use the utility screen of the component.

To update the firmware of a component, the firmware image file of the firmware for update must previously be stored in the managed server. On the firmware update screen, specify the path to the firmware image file for update.

The table below shows the potential cases in which the firmware of a component is to be updated.

Component	Firmware update	
	Remote	**Local**
CPU Module	When BIOS must be updated to new one. Executable in any of the following module states (this can be viewed on manager screen): • Removed • Broken or forced stop • No fault found by diagnosis To update the module under operation, bring down the module before the update.	When BIOS must be updated to new one. Executable in the following module state: • When the status LED 1 is red and the status LED 2 is off Only the status LED 1 illuminates red when the module is in one of the following states: • Removed • Broken or forced stop • No fault found by diagnosis (Firmware Update Complete) To update the module under operation, bring down the module before the update.

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Procedure in NEC ESMPRO Manager

1. Save the image data of the update firmware in an arbitrary directory of the NEC Express5800/ft series.

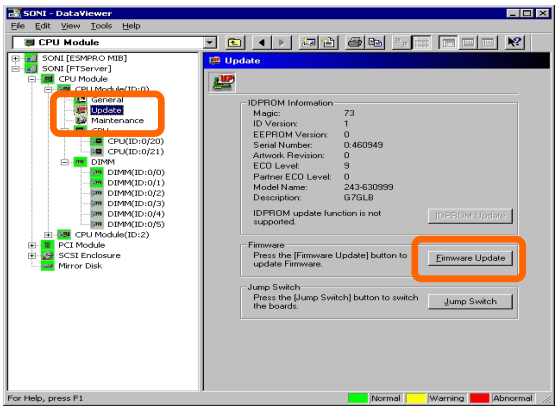
   Save the image data in any way. Write down the path to the directory in which the image data is saved.

2. Select the target component in the [FTServer] tree.

3. Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

4. Click the [Firmware Update] button in the [Update] screen for the target component.

Sample screen of NEC ESMPRO Manager

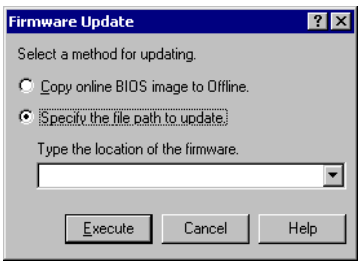


[Update] screen of CPU module
[CPU Module] – [Update]

5. Select [Specify the file path to update], enter the directory in which the updated firmware specified in the input box in step 1 is saved, and click the [Execute] button.

   Perform the firmware update.

   The update result can be confirmed by the state on the target component screen (indication of "Firmware update completed"). The result of the update processing is reported by the NEC Express5800/ft series as an alert.



6. After the BIOS for a single CPU module is completed, click the [Jump Switch] button. The module completely updated is started and the active module is stopped.

7. Start the other module stopped.

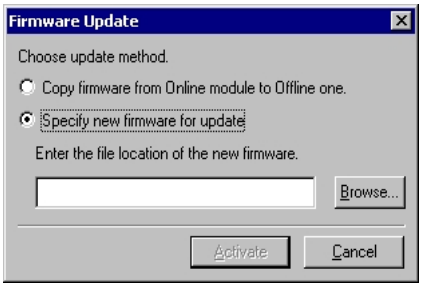
Starting the module causes the firmware to be updated automatically. However, if the [Enable automatic firmware update] property is invalid, update the module in the procedure as follows:

(1) Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

(2) Click the [Firmware Update] button in the [Update] screen for the target component.

(3) Select the update method in the [Firmware Update] dialog box and click the [Run] button.

(4) Start the module.



Even if you do not have the image data of firmware for update, the firmware can be copied from the other module.

By starting the module, the firmware will be updated automatically. However, when the [Enable automatic firmware update] property is disabled, follow the steps below to update the firmware:

1. Start the system using the module of the firmware copy source.
   See the current status by the “Status” indication on the target component screen of the copy destination and confirm that it is stopped.
2. On the [Update] screen of the target component, click [Firmware update].
3. When a firmware updating dialog appears, check [Copy firmware from Online module to Offline one.] and execute it.
   Firmware is updated by copying the firmware on the online side to the offline side.
4. Start the stopped module.

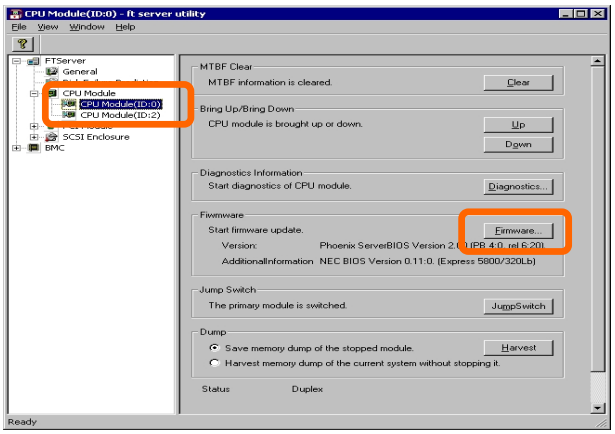
Procedure in ft server utility

1. Save the image data of the update firmware in a desired directory of the NEC Express5800/ft series.

   Save the image data in some manner. Write down the path to the directory in which the image data is saved.

2. Select the target component with the ft server utility.
3. Check the current state of the target component with the LEDs. If the component is operating, stop the component.
4. Click the [Firmware Update] button for the target component.

Sample screen of ft server utility

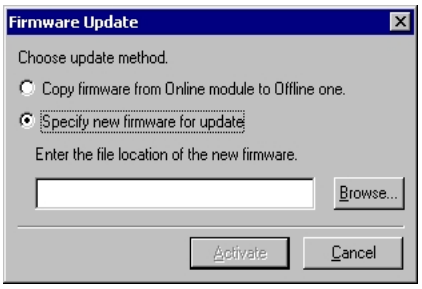


[CPU Module]

5. Select [Specify new firmware for update], enter the directory in which the updated firmware specified in the input box in step 1 is saved, and click the [Run] button.

   Perform the firmware update.

6. Check the update result with the event log.



7. After the BIOS for a single CPU module is completed, click the [Jump Switch] button.

The module completely updated is started and the module under operation is stopped.

8. Start the other inactive module.

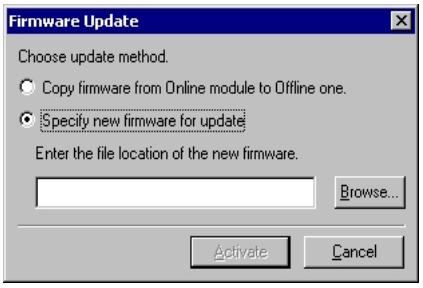
Starting the module causes the firmware to be updated automatically. However, if the [Enable automatic firmware update] property is disabled, update the module in the procedure as follows:

(1) Check the current state with the "State" display on the target component screen. If the component is operating, stop the component.

(2) Click the [Firmware Update] button in the [Update] screen for the target component.

(3) Select the update method in the [Firmware Update] dialog box and click the [Run] button.

(4) Start the module.



Even if you do not have the image data of firmware for update, the firmware can be copied from the other module.

By starting the module, the firmware will be updated automatically. However, when the [Enable automatic firmware update] property is disabled, follow the steps below to update the firmware:

1. Start the system using the module of the firmware copy source.
   See the current status by the “Status” indication on the target component screen of the copy destination and confirm that it is stopped.
2. On the [Update] screen of the target component, click [Firmware update].
3. When a firmware updating dialog appears, check [Copy firmware from Online module to Offline one.] and execute it.
   Firmware is updated by copying the firmware on the online side to the offline side.
4. Start the stopped module.

Dump Collection

To collect the dump file with NEC ESMPRO Manager, use [CPU Module] →[Maintenance] tree in the data viewer.

To collect the dump with the ft server utility, use the utility screen of the component.

IMPORTANT: Acquire the dump only for the examination of a fault.

The dump can be collected in two ways. In each way, the dump file is collected with the same path and file name "%SystemDrive%\NECDump\MEMORY.DMP" as the dump file of the OS standard.

- Collecting dump of inactive module

  The dump is acquired from the inactive CPU module (due to the occurrence of a fault or forced stop).

- Collecting dump under system operation

  Either of the CPU modules is entered into the offline state and the dump is collected during system operation. After the acquisition, the CPU module is returned to the online state again. This can be done only in the duplex system.

The table below shows the potential cases in which the dump is acquired.

Component	Saving dump of stopped module		Saving dump of component under system operation	
	Remote	Local	Remote	Local
CPU Module	–	When a fault or malfunction occurs in the system. Save the dump if requested by maintenance personnel. Executable in the following module state: • Only the red LED is on However, this function operates only in a fault state. An execution error occurs in any other cases. Only the red LED is on when the module is in one of the following states: • Removed • Broken • Shot • Firmware Completion of update • No fault found by diagnosis	When a fault or malfunction occurs in the system. Save the dump if requested by maintenance personnel. Executable in the following module state (this can be viewed on manager screen): • Duplex	When a fault or malfunction occurs in the system. Save the dump if requested by maintenance personnel Executable in the following module state: • When only the green LED is on and the module is in redundant configuration state Only the green LED is on when the module is in the following state: • Duplex

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Procedure in NEC ESMPRO Manager

The [Dump] button of NEC ESMPRO Manager performs the function of "saving dump during system operation."

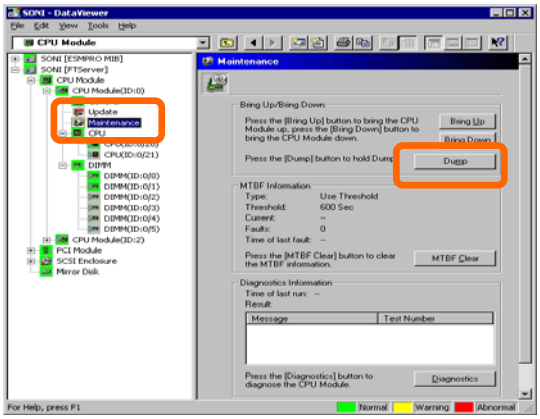
1. Select [CPU Module] in the [FTServer] tree.
2. Check the current state with the "State" display on the target component screen.
3. Click the [Dump] button in the [Maintenance] screen for the target component.

   A certain time is required for the dump saving.

   The dump is stored as %SystemDrive%\NECDump\MEMORY.DMP on the managed server.

   The result of the dump saving is reported by the NEC Express5800/ft series as an alert.

Sample screen of NEC ESMPRO Manager



[Maintenance] screen of CPU module
[CPU Module] – [Maintenance]

Procedure in ft server utility

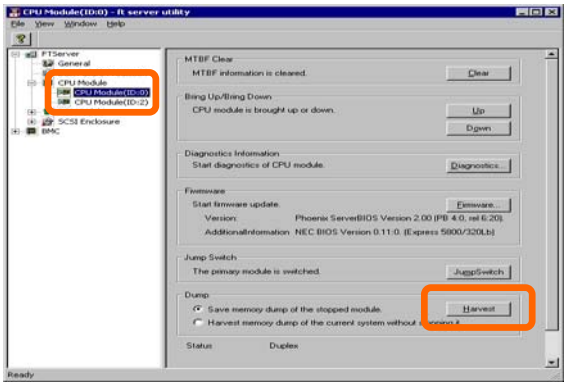
1. Select the target CPU module by using the ft server utility.
2. Check the current state of the target CPU module with the LEDs.
3. Select the dump acquisition method with [Dump] of the target CPU module and click the [Harvest] button.

   A certain time is required for the dump acquisition.

   The dump is stored as %SystemDrive%\NECDump\MEMORY.DMP on the server.

   The result of the dump acquisition can be confirmed in the event log.

Sample screen of ft server utility



[CPU Module]

SCSI Bus Reset

The SCSI bus can be reset.

Select [FTServer] tree→[PCI Module]→[SCSI adapter]→[SCSI bus] screens with the ft server utility. Open the tree of the component for which the SCSI bus is to be reset and select the [SCSI bus] tree.

The table below shows the potential cases in which the SCSI bus is reset.

Component	Bus reset	
	Remote	Local
SCSI Bus	–	When a malfunction occurs in the SCSI bus to require the bus reset. Provide the bus reset if requested by maintenance personnel. Executable in the following module state: • Only the green LED is on Only the green LED is on when the module is in the following state: • Duplex

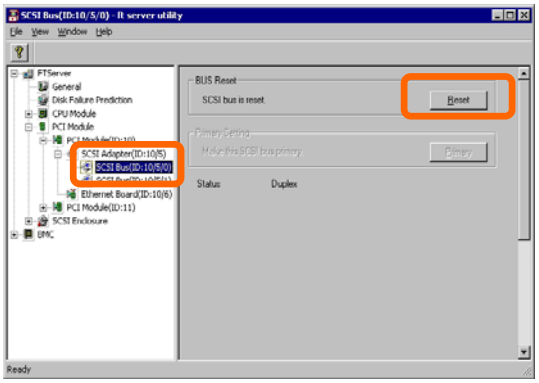
Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Reset the SCSI bus with the ft server utility in the following procedure. NEC ESMPRO Manager cannot reset the SCSI bus. However, because the ft server utility cannot check the setup of the SCSI bus, check the bus state with NEC ESMPRO Manager in advance.

1. Select the target SCSI Bus in the [FTServer] tree.
2. Click the [Reset] button for [Bus Reset] in the SCSI bus screen.

   The modification result can be checked in the event log.

Sample screen of ft server utility



[PCI Module] – [SCSI Adapter] – [SCSI Bus]

Setup of Preventive Disk Maintenance

In this section, the preventive disk maintenance (S.M.A.R.T.) is configured.

If the preventive disk maintenance (S.M.A.R.T.) is enabled (by checking Enable on the setting screen), the disk fault monitoring function is enabled to detect possible disk faults. Disabling the preventive disk maintenance disables the disk fault monitoring function.

The table below shows the potential cases in which the setup of the preventive disk maintenance is modified.

IMPORTANT: The disk failure prediction (S.M.A.R.T.) feature is not supported in this server. Use ft server utility to disable this feature.

When a disk is replaced, be sure to change the setting described below.

(Contact your maintenance personnel for changing the setup of the preventive disk maintenance in any case other than above.)

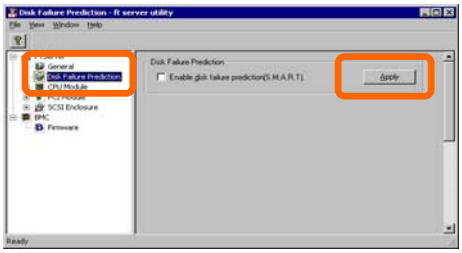
Component	Setup of preventive disk maintenance (S.M.A.R.T.)	
	Remote	Local
SCSI disk	–	Executable if the system is operating. Use this function at disk replacement Change the setting to "Disable" before removing disk. Insert a new disk and, after termination of disk replacement, change the setting to "Enable."

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Change the setup of the preventive disk maintenance with the ft server utility in the following procedure. NEC ESMPRO Manager cannot set the preventive disk maintenance.

1. Select [Disk Failure Prediction] in the [FTServer] tree.
2. Check the check box of [Enable disk failure prediction [SMART]] (or cancel the check).
3. Click the [Apply] button.

Sample screen of ft server utility



[Preventive Disk Maintenance]

Setup of System Operation

The following properties can be set as the operation setup of the whole system.

- Quick dump

  If this property is enabled (by checking "Enable" on the setup screen), the dump is acquired in parallel with the system startup if a fault occurs in the system. If this property is disabled, the dump is acquired by the dump function normally provided by OS.

  The initial setup value is "Enable."

- Auto firmware update

  If a new CPU module containing BIOS different from that of the existing CPU module in version with this property being enabled (by checking "Enable" on the setup screen), the BIOS of the new CPU module is updated to the BIOS of the existing CPU module to match with each other. If this property is disabled, the BIOS of the new CPU module is not updated automatically.

  The initial setup value is "Enable."

- Auto module start

  If this property is enabled (by checking "Enable" on the setup screen), the CPU or PCI module newly inserted is automatically started to be operable. If this property is disabled, the module is not started automatically.

  The initial setup value is "Enable."

  IMPORTANT: In the NEC Express5800/ft series with ft control software 3.0 or later, this property must be "Enable." Never specify "Disable."

The system operation can be set on [FTServer] tree→[General] screen of the ft server utility.

The table below shows the potential cases in which the system operation setup is changed. Contact your maintenance personnel for the change of the system operation setup. Setting change will take effect after system reboot. However, the utility does not indicate that reboot is required.

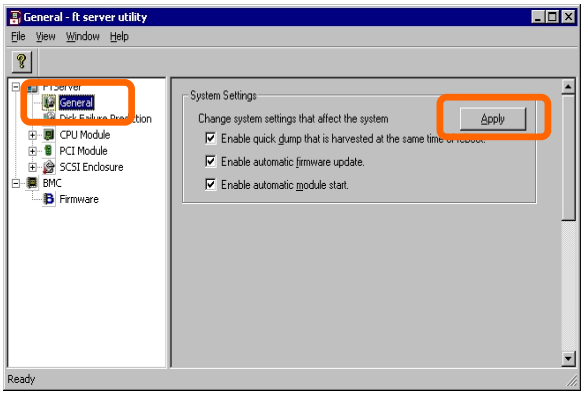
Component	Quick dump		Auto firmware update		Auto module start	
	Remote	Local	Remote	Local	Remote	Local
Whole system	–	Executable if the system is operating. When dump is acquired by using the dump function normally installed in OS at occurrence of system fault.	–	Executable if the system is operating. When firmware is updated manually at insertion of new CPU module	–	Executable if the system is operating. When firmware is updated manually at insertion of new CPU/PCI module

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Configure the system settings using the ft server utility in the following procedure. The system cannot be configured using the NEC ESMPRO Manager.

1. Select [General] in the [FTServer] tree.
2. Check the property of carrying out the modification with [System Settings] (or cancel the check).
3. Click the [Apply] button.

Sample screen of ft server utility



BMC Firmware Update

The firmware of the BMC on the PCI module can be updated.

The base management controller (BMC) is the processor exclusively used for monitoring the system's operating environment faults and controlling of the system.

The BMC firmware can be updated by using the BMC firmware update utility.

Both NEC ESMPRO Manager and the ft server utility can start the BMC firmware update utility.

To update the BMC firmware, the firmware image file must be updated on the managed server in advance. On the BMC firmware update screen, specify the path of the image file of the firmware to be updated.

The table below shows the potential cases in which the BMC firmware is to be updated.

IMPORTANT: Contact your maintenance personnel for the update of the BMC firmware.

Component	BMC firmware update	
	Remote	Local
BMC	When an update to new firmware is required. Executable in the following module state (this can be viewed on manager screen): • Duplex	When an update to new firmware is required. Executable in the following module state • Only the green LEDs on all PCI modules are on Executable in the following state when only the green LEDs on all PCI modules are on: • Duplex

Remote: Executable from remote management PC by using NEC ESMPRO Manager
Local: Executable on local server by using ft server utility
–: Not support

Procedure of Update from NEC ESMPRO Manager Menu

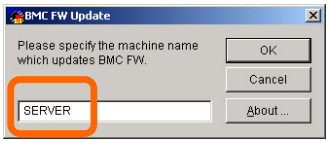
Update firmware in the procedure as follows:

1. Select [Tools]→[BMC FW Update Utility] from the Operation Window's menu.

   The [BMC FW Update] dialog box appears.

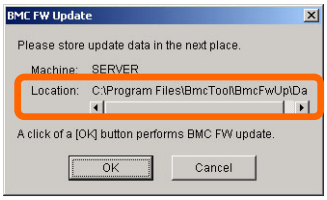
2. Enter the device name and click [OK].

   The [Execution Check] dialog box appears.



3. Store the firmware in the directory specified by [Location].

   The storage area may be modified. See "Change of Update Data Storage Destination " described later.

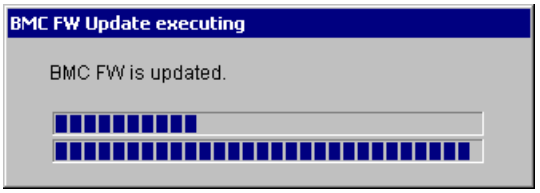

BMC FW Update
Please store update data in the next place.
Machine: SERVER
Location: C:\Program Files\BmcTool\BmcFwUp\Da
A click of a [OK] button performs BMC FW update.
OK
Cancel

4. Click [OK].

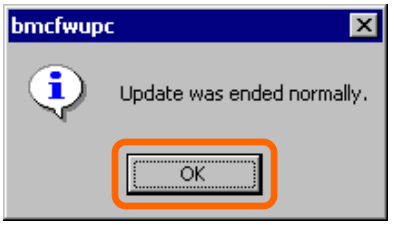
   Run firmware update.

   The advance of the update appears during update.

   At the termination of update, the update result is displayed.



5. Click [OK].

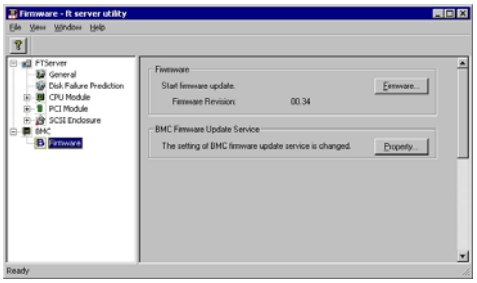


Procedure of Update from ft server utility

Update the firmware in the procedure as follows:

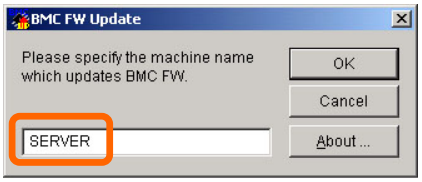
1. Click the [Firmware] button in the [Firmware] tree.

The [BMC FW Update] dialog box appears.



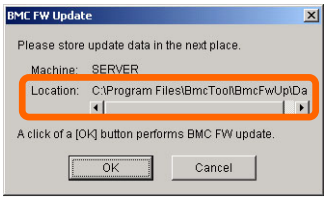
2. Enter the device name and click [OK].

The [Execution Check] dialog box appears.



3. Store the firmware in the directory shown in [Location].

The storage area may be changed. See "Change of Update Data Storage Destination" described later.

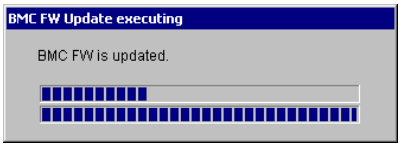

BMC FW Update
Please store update data in the next place.
Machine: SERVER
Location: C:\Program Files\BmcTool\BmcFwUp\Da
A click of a [OK] button performs BMC FW update.
OK
Cancel

4. Click [OK].

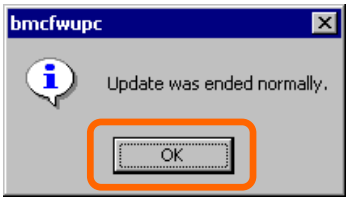
Execute the firmware update.

The progress of the update appears during the update.

The update result appears after the update is terminated.



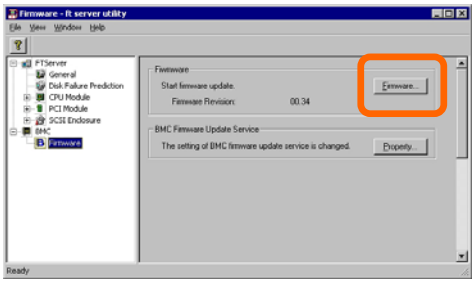
5. Click [OK].



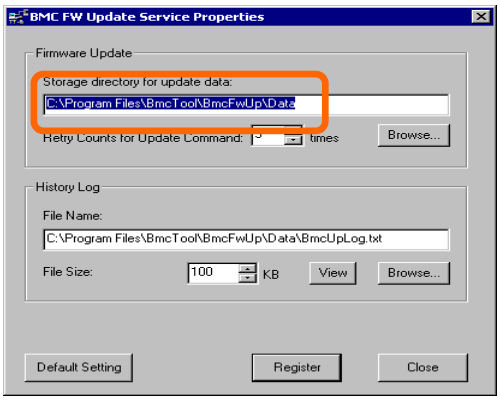
Change of Update Data Storage Destination

Perform the firmware update by using the ft server utility in the procedure below:

1. Click the [Properties] button in [BMC Firmware Update Service].
   The [BMC FW Update Service Properties] dialog box appears.



2. Enter the storage destination in [Storage directory for update data:] and click [Register].



Refresh of View based on State Change Alert Setting

A new function is supported so that NEC ESMPRO Manager window will be updated on a system state change basis (in other words, whenever necessary). This function is OFF by default. See the [Setting] below about how to turn it ON.

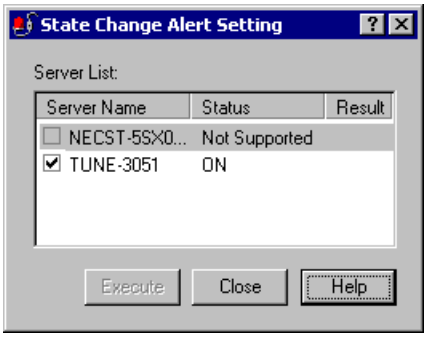
NEC ESMPRO Manager window is updated by one minute-interval polling by default. Therefore, there is some time-lag for NEC ESMPRO Manager to recognize changes in NEC Agent. By using this function, the time-lag can be reduced. However, it may consume a little bit more network band width since each state change will be notified to NEC ESMPRO Manager as some kind of alert.

[Setting]

1. Select [All Programs] → [Esmpro] from the start menu and click [Manager Settings].

[Manager Settings] dialog box

2. Check [Enable the State Change Alert Setting].
3. Click the [Agent Setting..] button.



[State Change Alert Setting] dialog box

4. Check the name of servers sending the state change alert to the Manager when the Agent recognizes changes in the state.

Click the [Execute] button for the setting change to take effect.

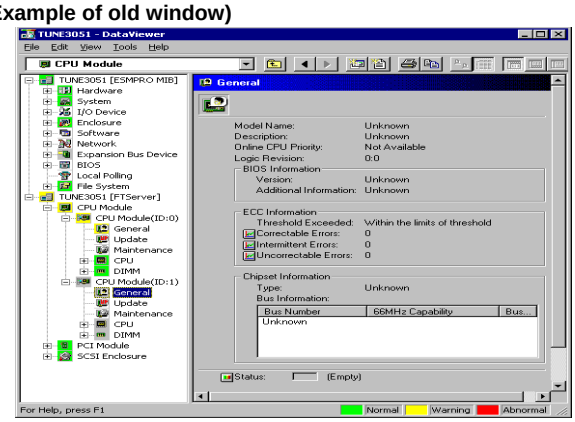
Change of Device State Color on DataViewer

From Manager Ver3.88 and Agent Ver3.8a, some change has been made to the color of device state in order to improve intuitive recognition at an abnormality or a system trouble occurrence.

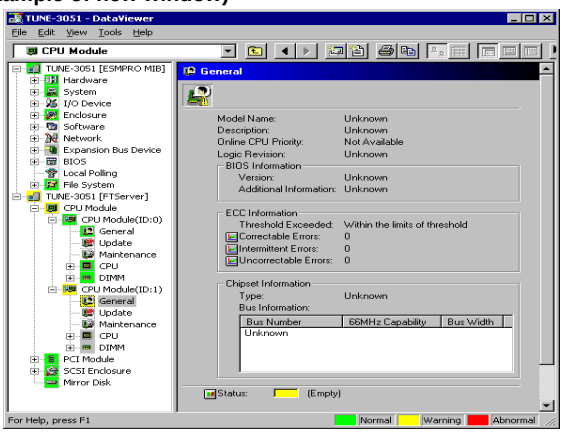
Device	State	Old color	New color
CPU Module	Empty	Gray	Yellow
CPU Module	Removed	Gray	Yellow
CPU Module	Simplex	Yellow	Green
PCI Module	Empty	Gray	Yellow
PCI Module	Removed	Gray	Yellow
PCI Module	Simplex	Yellow	Green
SCSI Slot	Empty (in case of mirroring)	Gray	Yellow

As shown above, the device state color of troubled components (components that is “Empty” or “Removed”) affecting the FT system’s redundancy has been changed to yellow (Warning) in order to make it easier to determine problems. However, for the device state color of modules operating without hardware trouble, the color indicating the simplex state has been changed from yellow (Warning) to green (Normal).

(Example of old window)



(Example of new window)



NEC MWA ~ MANAGEMENT WORKSTATION APPLICATION ~

NEC MWA is an application that enables the remote management of the server through a management PC over the network. (A management PC is a computer running NEC ESMPRO Manager.)

Refer to "MWA First Step Guide" in the following directory of NEC EXPRESSBUILDER CD-ROM for details of its functions and operation.

CD-ROM drive: \mwa\doc\mwa_fsg.pdf

TIPS: How to install NEC MWA is described in online documents. See "MWA Installation Guide" for details.

Servers to be remotely managed by NEC MWA

The server with RomPilot or BMC can be managed by NEC MWA.

This product has both RomPilot and BMC (IPMI1.0).

PRECAUTIONS:

"MWA First Step Guide" is common to all the managed servers. The following denotes notes and restrictions for this product.

- The Console Redirection feature with WAN or direct connection cannot be used when the server is operated remotely from the other management PC by using the RomPilot feature via LAN. To use Console Redirection with WAN or direct connection, set "RomPilot Support" in "Advanced" menu of BIOS setup utility to "Disabled". See Chapter 4 "SYSTEM BIOS ~SETUP~" for details.
- ESCD information is not collected by NEC MWA. If you attempt to collect it from NEC MWA, "ESCD data read error server report: Plug and Play call error" is generated.
- NO NEC MWA Agent is available on this product. Use the "BMC configuration tool" to configure this product on Windows.

Remote Management Configuration for the Server without Console

If the main unit does not have a console such as keyboard, you can operate tools on the server remotely using NEC MWA's remote console functions and NEC EXPRESSBUILDER's consoleless functions.

There are two ways of remote console connection depending on the condition of connection between the management PC and the main unit:

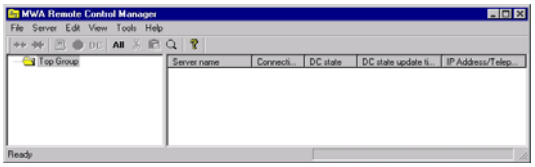
- Connect from the management PC linked to the main unit through LAN.
- Connect from the management PC directly linked (through Serial port B) to the main unit.

Connect from the Management PC Linked through LAN

On the management PC that is linked through LAN, perform the steps below:

1. Start the management PC where NEC MWA is installed. From the Start menu, select [Program] → [NEC MWA] → [MWA].

   When NEC MWA starts, the initial screen "Remote Control Manager" will appear.



2. Insert a formatted 1.44MB floppy disk into the drive.
3. From NEC MWA's [File] menu, select [Configuration] command to open [Configuration] dialog box.
4. Select [New] to display the [Select a model] dialog box.
5. Check [Write to FD] and select an applicable model to open [Configuration for ft Server] dialog box.

   Ex) The model name is printed on the front cover like "NEC Express5800/320Lc," or "NEC Express5800/320Lc-R."

6. On the [Configuration for ft Server] dialog box, specify/register configuration information including the names of computers to be managed, and then write the information to FD as the following filename:

   <Filename>

   CSL_LESS.CFG

   The setting items of the server are as follows:

   Computer Name (The managed server name. Arbitrary)

   IP address

   Subnet mask

   Default gateway

   Primary contact (Management PC's IP address)

7. Right-click the server name to open the pop-up menu, from which select [Property] command to open [Property] dialog box.
8. When the [Property] dialog box appears, specify the items as follows:

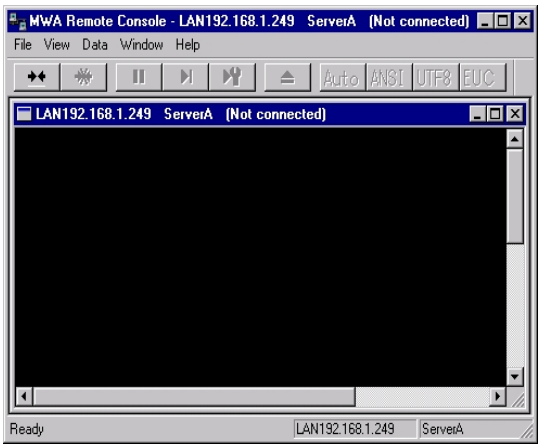
   <[ID] page>

   Connection mode: LAN

   <[Alert notification] page>

   Uncheck [Use Default Settings] and check [Reset] of [Activate].

9. Right-click the server name to open the pop-up menu and select [Open Remote Console] to open [MWA Remote Console].



10. Select the [Action at Remote Console Connect] command from the popup menu displayed by right-clicking the server window to display the [Action at Remote Console Connect] dialog box. Then select [Go MWA mode].

11. Insert NEC EXPRESSBUILDER CD-ROM into the drive of the computer to be managed and insert floppy disk storing the configuration information (CSL_LESS.CFG) into the FDD drive.

12. Hook up the management PC to LAN.

13. Power off and on the main unit to reboot the system.

After one reboot, the main menu will appear on the management PC's screen, on which you can perform hardware setup and run utilities.

TIPS: If the configuration information (CSL_LESS.CFG) in the FD has already been loaded, the main menu will appear without a reboot.

14. When the main menu appears on the management PC's screen, eject the floppy disk.

15. If you use other tools, exit NEC EXPRESSBUILDER and power off/on the main unit.

IMPORTANT: After completing the procedure for remote console connection, uncheck [Reset] of [Activate] in [Property] dialog box.

Connect from the Management PC Directly Linked (through Serial port B)

On the management PC that is linked directly to Serial port B of the main unit, perform the steps below:

1. Start the management PC where NEC MWA is installed. From the Start menu, select [Program] → [NEC MWA] → [MWA].

   When NEC MWA starts, the initial screen "Remote Control Manager" will appear.

2. Select [Environment] – [Direct Connection Setting] from the [File] menu of NEC MWA to display the [Direct Connection] dialog box. Configure the following settings:

   <Direct Connection>
   Port No.: COM port on the management PC to be connected
   Baud Rate: 19200
   Flow Control: None

3. From MWA's [File] menu, select [Configuration] command to open [Configuration] dialog box.

4. Select [New] to display [Select a model] dialog box.

5. Check [Write to FD] and select an applicable model to open [Configuration for ft Server] dialog box.

   Ex) The model name is printed on the front cover like "NEC Express5800/320Lc," or "NEC Express5800/320Lc-R."

6. On the [Configuration for ft Server] dialog box, specify/register configuration information including the names of computers to be managed, and then write the information to FD as the following filename:

   <Filename>
   CSL_LESS.CFG

7. Right-click the server name to open the pop-up menu and select [Property] command to open [Property] dialog box.

8. When the [Property] dialog box appears, specify the items as follows:

   <[ID] page>
   Connection mode: COM
   COM: Direct (cross cable)

9. Right-click the server name to open the pop-up menu and select [Open Remote Console] to open [MWA Remote Console].

   After checking to see if the server window is open on [MWA Remote Console], click the [Connect] button.

10. Hook up the management PC directly to Serial port B of the computer to be managed.

11. Insert NEC EXPRESSBUILDER CD-ROM into the drive of the managed computer and insert the floppy disk storing the configuration information (CSL_LESS.CFG) into the FDD drive.

12. Power off and on the main unit to reboot the system.

After one reboot, the main menu will appear on the management PC's screen, on which you can perform hardware setup and run utilities.

TIPS: If the configuration information (CSL_LESS.CFG) in the FD has already been loaded, the main menu will appear without a reboot.

IMPORTANT: For setting up MWA using Console Redirection (via WAN or direct), specify "Onboard COM B" to [SerialPort Address] from BIOS setup utility's [System Hardware]→[Console Redirection] menu. For details, see "SYSTEM BIOS ~SETUP~" in Chapter 4.

13. If you use other tools, exit NEC EXPRESSBUILDER and power off/on the main unit.

IMPORTANT: After completing the procedure for remote console connection, click [Disconnect] on the [MWA Remote Console] window.

(This page is intentionally left blank.)

Chapter 6

Maintenance

This chapter describes the daily maintenance of NEC Express5800/ft series and precautions when relocating or storing the server.

DAILY MAINTENANCE

To use your NEC Express5800/ft series in best condition, check and maintain regularly as described below. If an error is found on your NEC Express5800/ft series, consult your sales agent.

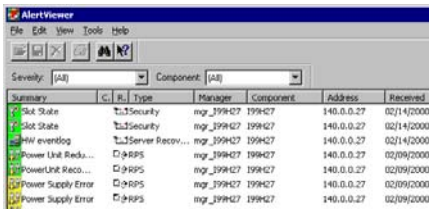
Checking Alert

Monitor the failure occurrence by NEC ESMPRO during the system operation.

Always check whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported on the Operation Window, Data Viewer, or Alert Viewer of NEC ESMPRO Manager.

Viewers of NEC ESMPRO

Operation Window


AlertViewer
File Edit View Tools Help
Severity: [All]
Component: [All]
Summary C. R. Type Manager Component Address Received
Slot State Security mgr_199H27 199H27 140.0.0.27 02/14/2000
Slot State Security mgr_199H27 199H27 140.0.0.27 02/14/2000
HW eventlog Server Recov... mgr_199H27 199H27 140.0.0.27 02/14/2000
Power Unit Redu... RPS mgr_199H27 199H27 140.0.0.27 02/09/2000
PowerUnit Reco... RPS mgr_199H27 199H27 140.0.0.27 02/09/2000
Power Supply Error RPS mgr_199H27 199H27 140.0.0.27 02/09/2000
Power Supply Error RPS mgr_199H27 199H27 140.0.0.27 02/09/2000

Alert Viewer

Data Viewer

Checking STATUS LEDs and LCD Display

Check the LED indication on the front of the NEC Express5800/ft series, on hard disks installed in 3.5-inch hard disk drive bay or on LCD display when the server is powered on or powered off by the shut down operation. The functions and indications of LEDs are described in Chapter 2. If any indication that shows an error, contact your sales agent.

Making Backup Copies

NEC recommends you make backup copies of your valuable data stored in hard disks of the server on a regular basis. For backup storage devices suitable for the server and backup tools, consult with your sales agent.

When you have changed the hardware configuration or BIOS configuration, select "System Information Management" and then "Save" of the Off-line Maintenance Utility to make a backup copy of the system information.

Cleaning

Clean the server on a regular basis to keep the server in a good shape.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See PRECAUTIONS FOR SAFETY in Chapter 1.

- Do not disassemble, repair, or alter the server.
- Do not look into the CD-ROM drive.
- Disconnect the power plug before cleaning the server.

Cleaning the NEC Express5800/ft series

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth. Follow the procedure below if stains remain on the surfaces:

IMPORTANT:

- To avoid altering the material and color of the server, do not use volatile solvents such as thinner or benzene to clean the server.
- The power receptacle, the cables, the connectors on the rear panel of server, and the inside of the server must be kept dry. Do not moisten them with water.

1. Make sure that the server is powered off.
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or warm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in Step 4.
6. Soak a soft cloth in water, squeeze it firmly and wipe the server with it once again.

7. Wipe the server with a dry cloth.
8. Wipe off dust from the fan exhaust opening on the rear of the server with a dry cloth.

Cleaning the Keyboard and Mouse

IMPORTANT: A keyboard and a mouse use USB interface. Therefore it is not necessary to power off the server when connecting or disconnecting them.

Disconnect the keyboard from the server while the devices in the system (the server and the peripheral devices) remain turned on. Wipe the keyboard surface with a dry cloth. Then connect the keyboard to the server.

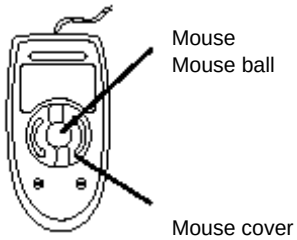
The mouse operation depends on the degree of smoothness of the internal ball rotation. To keep the mouse ball clean, use the mouse in a place with little dust. Follow the steps below to clean the mouse regularly:

1. Disconnect the mouse from the USB hub of the keyboard while the server remains powered on.
2. Turn the mouse upside down, and rotate the mouse ball cover counterclockwise to remove it. Take out the ball from the mouse.
3. Wipe the mouse ball with a dry soft cloth.

   If stains remain, use a soft cloth to wipe them off. Soak the soft cloth in neutral detergent that is diluted with water or warm water, and squeeze it firmly.
4. Wipe three small rollers inside the mouse with cotton swab.

   Use the cotton swab soaked with alcohol if stains remain.
5. Put the mouse ball back into the mouse.

   If the mouse or rollers are wet in steps 3 and 4, put it back after fully dried.
6. Place the mouse ball cover, and rotate it clockwise until it is locked.
7. Connect the mouse to the server (the USB hub of the keyboard).



Cleaning the Floppy Disk Drive

A read/write error may occur due to stains on the read/write head of the floppy disk drive.

Use the cleaner dedicated for floppy disk drive to clean the read/write head. It is recommended to clean the head on regular basis.

Cleaning CD-ROM

A dusty CD-ROM or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and CD-ROM regularly:

1. Make sure that the server is powered.
2. Press the Eject button on the front of the CD-ROM drive.
   The tray comes out.
3. Hold the CD-ROM lightly and take it out from the tray.

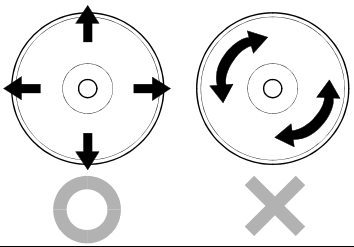
IMPORTANT: Do not touch the signal side of the CD-ROM with your hand.

4. Wipe the tray with a dry soft cloth.

IMPORTANT: Do not wipe the lens of the CD-ROM drive. Doing so may damage the lens and may cause a malfunction of the drive.

5. Gently push on the tray front to close the tray.
6. Wipe the signal side of the CD-ROM with a dry soft cloth.

IMPORTANT: Wipe CD-ROMs from the center to the outside. Use only CD-ROM cleaner if necessary. Cleaning a CD-ROM with record spray/cleaner, benzene, or thinner causes damage to the CD-ROM contents. At worst, inserting the CD-ROM into the server may cause failure.



Cleaning Tape Drive

Dirt on the tape head may be a cause of unsuccessful backup and damage to tape cartridge. Clean the tape head regularly using a cleaning tape. For procedure and interval of cleaning as well as lifetime of a tape cartridge to use, see instructions included with the tape drive.

SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Select [Tools] → [System Diagnostics] in the NEC EXPRESSBUILDER to diagnose the server.

Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk used as a system

IMPORTANT: When executing the system diagnostics, make sure to remove the LAN cable. Executing the system diagnostics with the LAN cable connected, the network may be influenced.

TIPS: On checking the hard disk, no data is written into the disk.

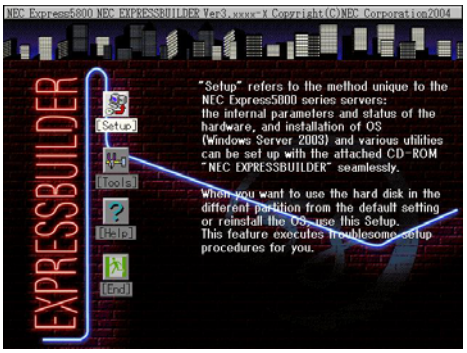
Startup and Exit of System Diagnosis

Procedures to start the diagnostic program are as follows:

1. Shutdown the OS, and power off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER CD-ROM to reboot the server.

   The following menu appears when the server is started using the NEC EXPRESSBUILDER.

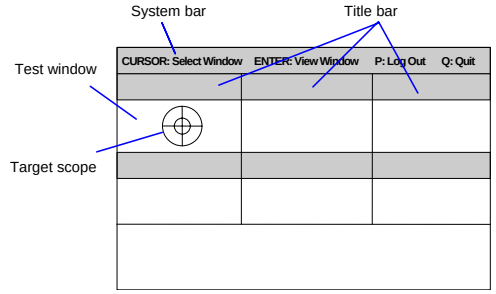
5. Select [Tools].


NEC Express5800 NEC EXPRESSBUILDER Ver3.xxxx-X Copyright(C)NEC Corporation2004
EXPRESSBUILDER
[Setup]
[Tools]
[Help]
[End]
"Setup" refers to the method unique to the NEC Express5800 series servers: the internal parameters and status of the hardware, and installation of OS (Windows Server 2003) and various utilities can be set up with the attached CD-ROM "NEC EXPRESSBUILDER" seamlessly.
When you want to use the hard disk in the different partition from the default setting or reinstall the OS, use this Setup. This feature executes troublesome setup procedures for you.

6. Select [System Diagnostics].

The system diagnosis starts and will be completed in approximately three minutes.

When the diagnosis is completed, the following appears on the screen of the display unit.



System bar: Shows information including time of progress during the diagnostics. Upon completion of the diagnostics, descriptions on key operations to navigate the window are shown.

Title bar: Shows items for diagnosis. If an error is detected, the bar is indicated in red.

Test window: Shows the progress or result of diagnostics.

Target scope: A cursor to select the test window. Use the cursor keys on the keyboard to move it to another test window. (Move the target scope to a desired window and press **Enter**. Now you can view detailed information on the selected window. To return to the previous window, press **Enter** once again.) Some system configurations do not display the target scope but change the color of test window's frame.

If an error is detected during the system diagnostics, the title bar turns in red, and error information is displayed in red characters. Note down the error message and contact your sales agent.

7. Press **Q** and select [Reboot] from the menu.

The server restarts and the system is started from the NEC EXPRESSBUILDER.

8. Exit the NEC EXPRESSBUILDER, and remove the CD-ROM from the CD-ROM drive.

9. Power off the server and unplug the power cord from the receptacle.

10. Reconnect all the LAN cables to the server.

11. Plug the power cord.

This completes the system diagnostics.

OFF-LINE MAINTENANCE UTILITY

The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

IMPORTANT:

- The Off-line Maintenance Utility is intended for use of your sales agent. The NEC EXPRESSBUILDER CD-ROM and the Off-line Maintenance Utility Bootable FD you have created contain a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your sales agent and follow instructions.
- Starting the Off-line Maintenance Utility disables any access from a client to the server.

Starting the Off-line Maintenance Utility

The Off-line Maintenance Utility may be started in the following ways.

NEC Express5800/ft series does not support the feature to start the Off-line Maintenance Utility from the maintenance partition.

- From the CD-ROM

  Set the NEC EXPRESSBUILDER CD-ROM in the CD-ROM drive and reboot the system. After the menu is displayed on the screen, select [Tools] → [Off-line Maintenance Utility]. The Off-line Maintenance Utility program starts from the CD-ROM.

- From the floppy disk

  Set the Off-line Maintenance Utility Bootable FD in the floppy disk drive and reboot the system. The Off-line Maintenance Utility program starts from the boot disk. The Off-line Maintenance Utility Bootable FD is created by selecting [Tools] → [Create Support FD] on the NEC EXPRESSBUILDER.

Features of Off-line Maintenance Utility

The Off-line Maintenance Utility provides the following features.

- IPMI Information Viewer

  Provides the functions to view the system event log (SEL), sensor data record (SDR), and field replaceable unit (FRU) in IPMI (Intelligent Platform Management Interface) and to make a backup copy of them.

  Using this feature, you can find system errors and events to determine a maintenance part.

- BIOS Setup Viewer

  Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

- System Information Viewer

  Provides the functions to view information on the processor (CPU) and the BIOS and export it to a text file.

- System Information Management

  Provides the function to make a back-up copy of your data. Without the backup data, the system-specific information and/or configuration may not be restored.

TIPS: For information on making backup copy of system information, see the separate volume “User’s Guide (Setup).” Only the authorized personnel are allowed to restore the backup data.

RELOCATING/STORING THE NEC Express5800/ft series

Follow the procedure below to relocate or store the server. (Users should not attempt to remove the rack-mountable server from the rack assembly.)

⚠ WARNING

Do not attempt to remove the server.

To avoid the risk of personal injury, users should not attempt to remove the server from the rack assembly. Removal of the server from the rack assembly should be performed by suitably trained maintenance personnel.

⚠ CAUTION

Observe the following instructions to use the server safely. There are risks of a fire, personal injury, or property damage. See PRECAUTIONS FOR SAFETY in Chapter 1 for details.

- Never attempt to lift the server only by yourself.
- Do not install the server in any place other than specified.
- Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.

IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact the sales agent.
- Make sure to make a backup copy of your valuable data in the hard disk, if any.
- When moving the server with hard disks, make sure not to give a shock to the hard disks.
- When storing the server, keep it under storing environment conditions (temperature: -10 to 55°C, humidity: 20 to 80%, non-condensing).

1. Take a floppy disk and a CD-ROM out of the server, if any.
2. Power off the server.
3. Unplug the power cord of the server from a power outlet.
4. Remove all the cables from the server.
5. Remove all the mounted modules.
6. If the server is a rack-mount model, remove the backplane and the rails from the rack cabinet.
7. Carry the backplane, rails and modules separately.

IMPORTANT: If the server is a tower model, do not hold the front bezel to lift it. The front bezel may get detached and fall off from the server, causing damage to the server.

8. Protect the server with the shock-absorbing materials, and pack it securely.

IMPORTANT:

Check and adjust the system clock before operating the server again after relocating or storing it.

If the server and the built-in optional devices are moved from a cold place to a warm place in a short time, condensation will occur and cause malfunctions and breakdown when these are used in such state. When you start operating these equipments again after the transportation or the storage, make sure to wait for a sufficient period of time to use them in the operating environment.

If the system clock goes out of alignment remarkably as time goes by, though the system clock adjustment is performed, contact your sales agent.

Chapter 7

Troubleshooting

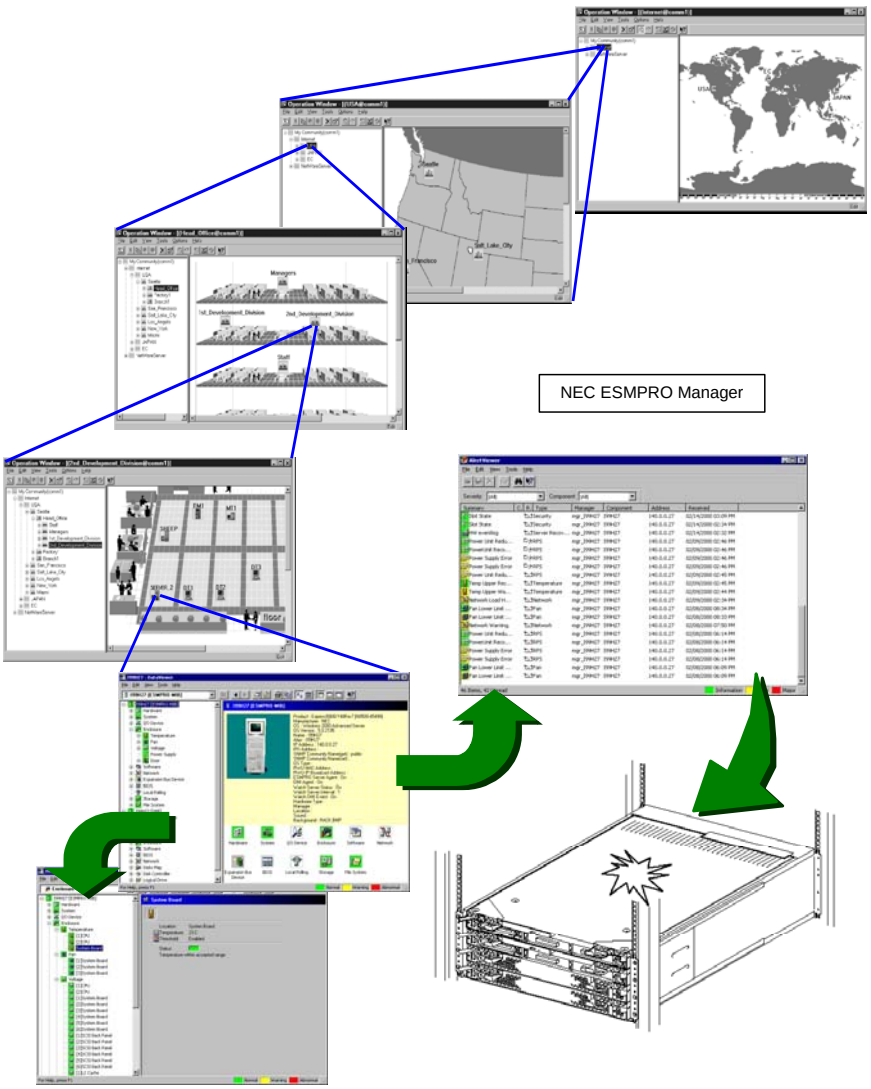
If the product does not work properly, see this chapter before deciding that it is a breakdown.

TO LOCATE THE ERRORS

Use NEC ESMPRO to monitor the occurrence of fault during the system operation.

Especially take note on whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported on the Operation Window, Data Viewer, or Alert Viewer of NEC ESMPRO Manager.

[Example]



ERROR MESSAGES

If the NEC Express5800/ft series enters the abnormal state, the error is posted by various means. This section explains the types of error messages.

Error Messages by LED Indication

The LEDs on the front and rear panels of the NEC Express5800/ft series and near the handles of hard disks inform the user of the various server statuses by the colors and the patterns of going on, going off, and flashing. If trouble seems to have occurred, check the LED indication. For the LED indication and meanings, see Chapter 2.

Error Messages on the Liquid Crystal Display (LCD)

The LCD on the front panel of the NEC Express5800/ft series displays the NEC Express5800/ft series status all the time. If an error occurs, the LCD displays the error message.

The following tables show the messages that are to be displayed on the LCD, and explain the meanings and procedures:

IMPORTANT: Although NEC Express5800/320Lc(-R) does not have an LCD on its front, you can check error messages from NEC MWA or NEC ESMPRO Manager as follows:

- NEC MWA: On a desired server, select [Start BMC dialog] from the Server menu. BMC dialog box will show the LCD status as well as server power status and LED status.
- NEC ESMPRO Manager: On Operation Window, select a desired server and start Data Viewer. You can check the messages on Data Viewer.

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
= A =					
AmbientTempAlm 00	Amber	Blink	CPU module	Temperature alarm (lower limit)	Contact your sales agent.
AmbientTempAlm 02	Amber	Lit	CPU module	Fatal temperature alarm (lower limit)	
AmbientTempAlm 07	Amber	Blink	CPU module	Temperature alarm (upper limit)	
AmbientTempAlm 09	Amber	Lit	CPU module	Fatal temperature alarm (upper limit)	
= B =					
BMC Unsync	-	-	PCI module #1	The BMC cannot be synchronized.	Contact your sales agent.
BMC0 Not Ready	Green	Blink	PCI module #1	PCI module's BMC is disconnected	If disconnection continues for a while, contact your sales agent.
BMC1 Not Ready	Green	Blink	PCI module #2		
= C =					
Cor0 +12vAlm 00	Amber	Blink	PCI module #1	12-V power voltage alarm (lower limit)	Contact your sales agent.
Cor0 +12vAlm 02	Amber	Lit	PCI module #1	Fatal 12-V power voltage alarm (lower limit)	
Cor0 +12vAlm 07	Amber	Blink	PCI module #1	12-V power voltage alarm (upper limit)	
Cor0 +12vAlm 09	Amber	Lit	PCI module #1	Fatal 12-V power voltage alarm (upper limit)	
Cor0 +2.5vAlm 00	Amber	Blink	PCI module #1	2.5-V power voltage alarm (lower limit)	
Cor0 +2.5vAlm 02	Amber	Lit	PCI module #1	Fatal 2.5-V power voltage alarm (lower limit)	
Cor0 +2.5vAlm 07	Amber	Blink	PCI module #1	2.5-V power voltage alarm (upper limit)	
Cor0 +2.5vAlm 09	Amber	Lit	PCI module #1	Fatal 2.5-V power voltage alarm (upper limit)	
Cor0 +3.3vAlm 00	Amber	Blink	PCI module #1	3.3-V power voltage alarm (lower limit)	
Cor0 +3.3vAlm 02	Amber	Lit	PCI module #1	Fatal 3.3-V power voltage alarm (lower limit)	
Cor0 +3.3vAlm 07	Amber	Blink	PCI module #1	3.3-V power voltage alarm (upper limit)	
Cor0 +3.3vAlm 09	Amber	Lit	PCI module #1	Fatal 3.3-V power voltage alarm (upper limit)	
Cor0 +3.3vsAlm 00	Amber	Blink	PCI module #1	3.3-V power voltage alarm (lower limit)	
Cor0 +3.3vsAlm 02	Amber	Lit	PCI module #1	Fatal 3.3-V power voltage alarm (lower limit)	
Cor0 +3.3vsAlm 07	Amber	Blink	PCI module #1	3.3-V power voltage alarm (upper limit)	
Cor0 +3.3vsAlm 09	Amber	Lit	PCI module #1	Fatal 3.3-V power voltage alarm (upper limit)	
Cor0 +5.0vAlm 00	Amber	Blink	PCI module #1	5-V power voltage alarm (lower limit)	Contact your sales agent.
Cor0 +5.0vAlm 02	Amber	Lit	PCI module #1	Fatal 5-V power voltage alarm (lower limit)	
Cor0 +5.0vAlm 07	Amber	Blink	PCI module #1	5-V power voltage alarm (upper limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
`Cor0 +5.0vAlm 09`	Amber	Lit	PCI module #1	Fatal 5-V power voltage alarm (upper limit)	Contact your sales agent.
`Cor0 +5.0vsAlm 00`	Amber	Blink	PCI module #1	5-V power voltage alarm (lower limit)	
`Cor0 +5.0vsAlm 02`	Amber	Lit	PCI module #1	Fatal 5-V power voltage alarm (lower limit)	
`Cor0 +5.0vsAlm 07`	Amber	Blink	PCI module #1	5-V power voltage alarm (upper limit)	
`Cor0 +5.0vsAlm 09`	Amber	Lit	PCI module #1	Fatal 5-V power voltage alarm (upper limit)	
`Cor0 -12vAlm 00`	Amber	Blink	PCI module #1	-12-V power voltage alarm (lower limit)	
`Cor0 -12vAlm 02`	Amber	Lit	PCI module #1	Fatal -12-V power voltage alarm (lower limit)	
`Cor0 -12vAlm 07`	Amber	Blink	PCI module #1	-12-V power voltage alarm (upper limit)	
`Cor0 -12vAlm 09`	Amber	Lit	PCI module #1	Fatal -12-V power voltage alarm (upper limit)	Contact your sales agent.
`Cor0 Bus PERR 01`	Green	Blink	PCI module #1	PCI bus parity error	
`Cor0 Bus SERR 01`	Green	Blink	PCI module #1	Fatal PCI bus error	
`Cor0 CLK Alm 00`	Amber	Blink	CLOCK board	`Clock` alarm (lower limit)	
`Cor0 CLK Alm 02`	Amber	Lit	CLOCK board	`Fatal Clock` alarm (lower limit)	
`Cor0 CLK Alm 07`	Amber	Blink	CLOCK board	`Clock` alarm (upper limit)	
`Cor0 CLK Alm 09`	Amber	Lit	CLOCK board	`Fatal Clock` alarm (upper limit)	
`Cor0 FAN Alm 01`	Amber	Blink	PCI module #1	Cooling fan1 alarm	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
`Cor0 FAN Alm 02`	Amber	Blink	PCI module #1	Cooling fan2 alarm	
`Cor0 FAN Alm 03`	Amber	Blink	PCI module #1	Cooling fan3 alarm	
`Cor0 FAN Alm 04`	Amber	Blink	PCI module #1	Cooling fan4 alarm	
`Cor0 FAN Alm 05`	Amber	Blink	PCI module #1	Cooling fan5 alarm	
`Cor0 offline`	Green	Blink	PCI module #1	PCI module logically isolated	Start the PCI module by ft sever utility or dismount and remount that module. If not solved by the above, contact your sales agent.
`Cor0 removed`	Green	Blink	PCI module #1	PCI module detached	Dismount and remount the PCI module. If not solved by the above, contact your sales agent.
`Cor0 Temp Alm 00`	Amber	Blink	PCI module #1	Temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
`Cor0 Temp Alm 02`	Amber	Lit	PCI module #1	Fatal temperature alarm (lower limit)	
`Cor0 Temp Alm 07`	Amber	Blink	PCI module #1	Temperature alarm (upper limit)	
`Cor0 Temp Alm 09`	Amber	Lit	PCI module #1	Fatal temperature alarm (upper limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
Cor1 +12vAlm 00	Amber	Blink	PCI module #2	12-V power voltage alarm (lower limit)	Contact your sales agent.
Cor1 +12vAlm 02	Amber	Lit	PCI module #2	Fatal 12-V power voltage alarm (lower limit)	
Cor1 +12vAlm 07	Amber	Blink	PCI module #2	12-V power voltage alarm (upper limit)	
Cor1 +12vAlm 09	Amber	Lit	PCI module #2	Fatal 12-V power voltage alarm (upper limit)	
Cor1 +2.5vAlm 00	Amber	Blink	PCI module #2	2.5-V power voltage alarm (lower limit)	
Cor1 +2.5vAlm 02	Amber	Lit	PCI module #2	Fatal 2.5-V power voltage alarm (lower limit)	
Cor1 +2.5vAlm 07	Amber	Blink	PCI module #2	2.5-V power voltage alarm (upper limit)	
Cor1 +2.5vAlm 09	Amber	Lit	PCI module #2	Fatal 2.5-V power voltage alarm (upper limit)	
Cor1 +3.3vAlm 00	Amber	Blink	PCI module #2	3.3-V power voltage alarm (lower limit)	
Cor1 +3.3vAlm 02	Amber	Lit	PCI module #2	Fatal 3.3-V power voltage alarm (lower limit)	Contact your sales agent.
Cor1 +3.3vAlm 07	Amber	Blink	PCI module #2	3.3-V power voltage alarm (upper limit)	
Cor1 +3.3vAlm 09	Amber	Lit	PCI module #2	Fatal 3.3-V power voltage alarm (upper limit)	
Cor1 +3.3vsAlm 00	Amber	Blink	PCI module #2	3.3-V power voltage alarm (lower limit)	
Cor1 +3.3vsAlm 02	Amber	Lit	PCI module #2	Fatal 3.3-V power voltage alarm (lower limit)	
Cor1 +3.3vsAlm 07	Amber	Blink	PCI module #2	3.3-V power voltage alarm (upper limit)	
Cor1 +3.3vsAlm 09	Amber	Lit	PCI module #2	Fatal 3.3-V power voltage alarm (upper limit)	
Cor1 +5.0vAlm 00	Amber	Blink	PCI module #2	5-V power voltage alarm (lower limit)	
Cor1 +5.0vAlm 02	Amber	Lit	PCI module #2	Fatal 5-V power voltage alarm (lower limit)	
Cor1 +5.0vAlm 07	Amber	Blink	PCI module #2	5-V power voltage alarm (upper limit)	
Cor1 +5.0vAlm 09	Amber	Lit	PCI module #2	Fatal 5-V power voltage alarm (upper limit)	
Cor1 +5.0vsAlm 00	Amber	Blink	PCI module #2	5-V power voltage alarm (lower limit)	
Cor1 +5.0vsAlm 02	Amber	Lit	PCI module #2	Fatal 5-V power voltage alarm (lower limit)	
Cor1 +5.0vsAlm 07	Amber	Blink	PCI module #2	5-V power voltage alarm (upper limit)	
Cor1 +5.0vsAlm 09	Amber	Lit	PCI module #2	Fatal 5-V power voltage alarm (upper limit)	
Cor1 -12vAlm 00	Amber	Blink	PCI module #2	-12-V power voltage alarm (lower limit)	
Cor1 -12vAlm 02	Amber	Lit	PCI module #2	Fatal -12-V power voltage alarm (lower limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
Cor1 -12vAlm 07	Amber	Blink	PCI module #2	-12-V power voltage alarm (upper limit)	Contact your sales agent.
Cor1 -12vAlm 09	Amber	Lit	PCI module #2	Fatal -12-V power voltage alarm (upper limit)	
Cor1 Bus PERR 01	Green	Blink	PCI module #2	PCI bus parity error	
Cor1 Bus SERR 01	Green	Blink	PCI module #2	Fatal PCI bus error	
Cor1 CLK Alm 00	Amber	Blink	CLOCK board	Clock alarm (lower limit)	
Cor1 CLK Alm 02	Amber	Lit	CLOCK board	Fatal Clock alarm (lower limit)	
Cor1 CLK Alm 07	Amber	Blink	CLOCK board	Clock alarm (upper limit)	
Cor1 CLK Alm 09	Amber	Lit	CLOCK board	Fatal Clock alarm (upper limit)	
Cor1 FAN Alm 01	Amber	Blink	PCI module #2	Cooling fan1 alarm	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
Cor1 FAN Alm 02	Amber	Blink	PCI module #2	Cooling fan2 alarm	
Cor1 FAN Alm 03	Amber	Blink	PCI module #2	Cooling fan3 alarm	
Cor1 FAN Alm 04	Amber	Blink	PCI module #2	Cooling fan4 alarm	
Cor1 FAN Alm 05	Amber	Blink	PCI module #2	Cooling fan5 alarm	
Cor1 offline	Green	Blink	PCI module #2	PCI module logically isolated	Start the PCI module by ft sever utility or dismount and remount that module. If not solved by the above, contact your sales agent.
Cor1 removed	Green	Blink	PCI module #2	PCI module detached	Dismount and remount the PCI module. If not solved by the above, contact your sales agent.
Cor1 Temp Alm 00	Amber	Blink	PCI module #2	Temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
Cor1 Temp Alm 02	Amber	Lit	PCI module #2	Fatal temperature alarm (lower limit)	
Cor1 Temp Alm 07	Amber	Blink	PCI module #2	Temperature alarm (upper limit)	
Cor1 Temp Alm 09	Amber	Lit	PCI module #2	Fatal temperature alarm (upper limit)	
CPU IERR 00	Green	Blink	CPU module #1	CPU#1 internal error	Contact your sales agent.
CPU IERR 01	Green	Blink	CPU module #1	CPU#2 internal error	
CPU IERR 20	Green	Blink	CPU module #2	CPU#1 internal error	
CPU IERR 21	Green	Blink	CPU module #2	CPU#2 internal error	
CPU T-Trip 00	Green	Blink	CPU module #1	CPU#1 thermal change error (upper limit)	
CPU T-Trip 01	Green	Blink	CPU module #1	CPU#2 thermal change error (upper limit)	
CPU T-Trip 20	Green	Blink	CPU module #2	CPU#1 thermal change error (upper limit)	
CPU T-Trip 21	Green	Blink	CPU module #2	CPU#2 thermal change error (upper limit)	
CPU0 +12ss Alm 00	Amber	Blink	CPU module #1	+12-V power voltage alarm (lower limit)	
CPU0 +12ss Alm 02	Amber	Lit	CPU module #1	Fatal +12-V power voltage alarm (lower limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU0 +12ss Alm 07	Amber	Blink	CPU module #1	+12-V power voltage alarm (upper limit)	Contact your sales agent.
CPU0 +12ss Alm 09	Amber	Lit	CPU module #1	Fatal +12-V power voltage alarm (upper limit)	
CPU0 +12v Alm 00	Amber	Blink	CPU module #1	12-V power voltage alarm (lower limit)	
CPU0 +12v Alm 02	Amber	Lit	CPU module #1	Fatal 12-V power voltage alarm (lower limit)	
CPU0 +12v Alm 07	Amber	Blink	CPU module #1	12-V power voltage alarm (upper limit)	
CPU0 +12v Alm 09	Amber	Lit	CPU module #1	Fatal 12-V power voltage alarm (upper limit)	
CPU0 +1.5v Alm 00	Amber	Blink	CPU module #1	1.5-V power voltage alarm (lower limit)	
CPU0 +1.5v Alm 02	Amber	Lit	CPU module #1	Fatal 1.5-V power voltage alarm (lower limit)	
CPU0 +1.5v Alm 07	Amber	Blink	CPU module #1	1.5-V power voltage alarm (upper limit)	Contact your sales agent.
CPU0 +1.5v Alm 09	Amber	Lit	CPU module #1	Fatal 1.5-V power voltage alarm (upper limit)	
CPU0 +2.5vAlm 00	Amber	Blink	CPU module #1	2.5-V power voltage alarm (lower limit)	
CPU0 +2.5vAlm 02	Amber	Lit	CPU module #1	Fatal 2.5-V power voltage alarm (lower limit)	
CPU0 +2.5vAlm 07	Amber	Blink	CPU module #1	2.5-V power voltage alarm (upper limit)	
CPU0 +2.5vAlm 09	Amber	Lit	CPU module #1	Fatal 2.5-V power voltage alarm (upper limit)	
CPU0 +2.5VcAlm 00	Amber	Blink	CPU module #1	2.5-V power voltage alarm (lower limit)	
CPU0 +2.5VcAlm 02	Amber	Lit	CPU module #1	Fatal 2.5-V power voltage alarm (lower limit)	
CPU0 +2.5VcAlm 07	Amber	Blink	CPU module #1	2.5-V power voltage alarm (upper limit)	
CPU0 +2.5VcAlm 09	Amber	Lit	CPU module #1	Fatal 2.5-V power voltage alarm (upper limit)	
CPU0 +3.3vAlm 00	Amber	Blink	CPU module #1	3.3-V power voltage alarm (lower limit)	
CPU0 +3.3vAlm 02	Amber	Lit	CPU module #1	Fatal 3.3-V power voltage alarm (lower limit)	
CPU0 +3.3vAlm 07	Amber	Blink	CPU module #1	3.3-V power voltage alarm (upper limit)	
CPU0 +3.3vAlm 09	Amber	Lit	CPU module #1	Fatal 3.3-V power voltage alarm (upper limit)	
CPU0 +3.3vsAlm 00	Amber	Blink	CPU module #1	3.3-V power voltage alarm (lower limit)	
CPU0 +3.3vsAlm 02	Amber	Lit	CPU module #1	Fatal 3.3-V power voltage alarm (lower limit)	
CPU0 +3.3vsAlm 07	Amber	Blink	CPU module #1	3.3-V power voltage alarm (upper limit)	
CPU0 +3.3vsAlm 09	Amber	Lit	CPU module #1	Fatal 3.3-V power voltage alarm (upper limit)	
CPU0 +5.0vAlm 00	Amber	Blink	CPU module #1	5-V power voltage alarm (lower limit)	
CPU0 +5.0vAlm 02	Amber	Lit	CPU module #1	Fatal 5-V power voltage alarm (lower limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU0 +5.0vAlm 07	Amber	Blink	CPU module #1	5-V power voltage alarm (upper limit)	Contact your sales agent.
CPU0 +5.0vAlm 09	Amber	Lit	CPU module #1	Fatal 5-V power voltage alarm (upper limit)	
CPU0 +5.0vsAlm 00	Amber	Blink	CPU module #1	5-V power voltage alarm (lower limit)	
CPU0 +5.0vsAlm 02	Amber	Lit	CPU module #1	Fatal 5-V power voltage alarm (lower limit)	
CPU0 +5.0vsAlm 07	Amber	Blink	CPU module #1	5-V power voltage alarm (upper limit)	
CPU0 +5.0vsAlm 09	Amber	Lit	CPU module #1	Fatal 5-V power voltage alarm (upper limit)	
CPU0 broken	Green	Blink	CPU module #1	CPU module breakdown	
CPU0 FAN Alm 01	Amber	Blink	CPU module #1	Cooling fan1 alarm	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU0 FAN Alm 03	Amber	Blink	CPU module #1	Cooling fan2 alarm	
CPU0 FAN Alm 04	Amber	Blink	CPU module #1	Cooling fan3 alarm	
CPU0 offline	Green	Blink	CPU module #1	PCI module logically isolated	Start the PCI module by ft sever utility or dismount and remount that module. If not solved by the above, contact your sales agent.
CPU0 removed	Green	Blink	CPU module #1	PCI module detached	Dismount and remount the PCI module. If not solved by the above, contact your sales agent.
CPU0 Temp Alm 00	Amber	Blink	CPU module #1	Temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU0 Temp Alm 02	Amber	Lit	CPU module #1	Fatal temperature alarm (lower limit)	
CPU0 Temp Alm 07	Amber	Blink	CPU module #1	Temperature alarm (upper limit)	
CPU0 Temp Alm 09	Amber	Lit	CPU module #1	Fatal temperature alarm (upper limit)	
CPU0 VccpAlm 00	Amber	Blink	CPU module #1	CPU operating voltage alarm (lower limit) (VCCP)	Contact your sales agent.
CPU0 VccpAlm 02	Amber	Lit	CPU module #1	Fatal CPU operating voltage alarm (lower limit) (VCCP)	
CPU0 VccpAlm 07	Amber	Blink	CPU module #1	CPU operating voltage alarm (upper limit) (VCCP)	
CPU0 VccpAlm 09	Amber	Lit	CPU module #1	Fatal CPU operating voltage alarm (upper limit) (VCCP)	
CPU0 Vtt Alm 00	Amber	Blink	CPU module #1	1.25-V power voltage alarm (lower limit)	
CPU0 Vtt Alm 02	Amber	Lit	CPU module #1	Fatal 1.25-V power voltage alarm (lower limit)	
CPU0 Vtt Alm 07	Amber	Blink	CPU module #1	1.25-V power voltage alarm (upper limit)	
CPU0 Vtt Alm 09	Amber	Lit	CPU module #1	Fatal 1.25-V power voltage alarm (upper limit)	

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU00 Temp Alm 00	Amber	Blink	CPU module #1	CPU#1 temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU00 Temp Alm 02	Amber	Lit	CPU module #1	CPU#1 fatal temperature alarm (lower limit)	
CPU00 Temp Alm 07	Amber	Blink	CPU module #1	CPU#1 temperature alarm (upper limit)	
CPU00 Temp Alm 09	Amber	Lit	CPU module #1	CPU#1 fatal temperature alarm (upper limit)	
CPU01 Temp Alm 00	Amber	Blink	CPU module #1	CPU#2 temperature alarm (lower limit)	
CPU01 Temp Alm 02	Amber	Lit	CPU module #1	CPU#2 fatal temperature alarm (lower limit)	
CPU01 Temp Alm 07	Amber	Blink	CPU module #1	CPU#2 temperature alarm (upper limit)	
CPU01 Temp Alm 09	Amber	Lit	CPU module #1	CPU#2 fatal temperature alarm (upper limit)	
CPU2 +12ss Alm 00	Amber	Blink	CPU module #2	12-V power voltage alarm (lower limit)	Contact your sales agent.
CPU2 +12ss Alm 02	Amber	Lit	CPU module #2	Fatal 12-V power voltage alarm (lower limit)	
CPU2 +12ss Alm 07	Amber	Blink	CPU module #2	12-V power voltage alarm (upper limit)	
CPU2 +12ss Alm 09	Amber	Lit	CPU module #2	Fatal 12-V power voltage alarm (upper limit)	
CPU2 +12v Alm 00	Amber	Blink	CPU module #2	12-V power voltage alarm (lower limit)	
CPU2 +12v Alm 02	Amber	Lit	CPU module #2	Fatal 12-V power voltage alarm (lower limit)	
CPU2 +12v Alm 07	Amber	Blink	CPU module #2	12-V power voltage alarm (upper limit)	
CPU2 +12v Alm 09	Amber	Lit	CPU module #2	Fatal 12-V power voltage alarm (upper limit)	
CPU2 +1.5vAlm 00	Amber	Blink	CPU module #2	1.5-V power voltage alarm (lower limit)	
CPU2 +1.5vAlm 02	Amber	Lit	CPU module #2	Fatal 1.5-V power voltage alarm (lower limit)	
CPU2 +1.5vAlm 07	Amber	Blink	CPU module #2	1.5-V power voltage alarm (upper limit)	
CPU2 +1.5vAlm 09	Amber	Lit	CPU module #2	Fatal 1.5-V power voltage alarm (upper limit)	
CPU2 +2.5vAlm 00	Amber	Blink	CPU module #2	2.5-V power voltage alarm (lower limit)	Contact your sales agent.
CPU2 +2.5vAlm 02	Amber	Lit	CPU module #2	Fatal 2.5-V power voltage alarm (lower limit)	
CPU2 +2.5vAlm 07	Amber	Blink	CPU module #2	2.5-V power voltage alarm (upper limit)	
CPU2 +2.5vAlm 09	Amber	Lit	CPU module #2	Fatal 2.5-V power voltage alarm (upper limit)	

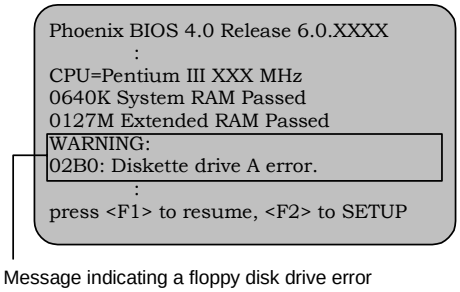
Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU2 +2.5VcAlm 00	Amber	Blink	CPU module #2	2.5-V power voltage alarm (lower limit)	Contact your sales agent.
CPU2 +2.5VcAlm 02	Amber	Lit	CPU module #2	Fatal 2.5-V power voltage alarm (lower limit)	
CPU2 +2.5VcAlm 07	Amber	Blink	CPU module #2	2.5-V power voltage alarm (upper limit)	
CPU2 +2.5VcAlm 09	Amber	Lit	CPU module #2	Fatal 2.5-V power voltage alarm (upper limit)	
CPU2 +3.3vAlm 00	Amber	Blink	CPU module #2	3.3-V power voltage alarm (lower limit)	
CPU2 +3.3vAlm 02	Amber	Lit	CPU module #2	Fatal 3.3-V power voltage alarm (lower limit)	
CPU2 +3.3vAlm 07	Amber	Blink	CPU module #2	3.3-V power voltage alarm (upper limit)	
CPU2 +3.3vAlm 09	Amber	Lit	CPU module #2	Fatal 3.3-V power voltage alarm (upper limit)	
CPU2 +3.3vsAlm 00	Amber	Blink	CPU module #2	3.3-V power voltage alarm (lower limit)	
CPU2 +3.3vsAlm 02	Amber	Lit	CPU module #2	Fatal 3.3-V power voltage alarm (lower limit)	
CPU2 +3.3vsAlm 07	Amber	Blink	CPU module #2	3.3-V power voltage alarm (upper limit)	
CPU2 +3.3vsAlm 09	Amber	Lit	CPU module #2	Fatal 3.3-V power voltage alarm (upper limit)	
CPU2 +5.0vAlm 00	Amber	Blink	CPU module #2	5-V power voltage alarm (lower limit)	
CPU2 +5.0vAlm 02	Amber	Lit	CPU module #2	Fatal 5-V power voltage alarm (lower limit)	
CPU2 +5.0vAlm 07	Amber	Blink	CPU module #2	5-V power voltage alarm (upper limit)	
CPU2 +5.0vAlm 09	Amber	Lit	CPU module #2	Fatal 5-V power voltage alarm (upper limit)	
CPU2 +5.0vsAlm00	Amber	Blink	CPU module #2	5-V power voltage alarm (lower limit)	
CPU2 +5.0vsAlm02	Amber	Lit	CPU module #2	Fatal 5-V power voltage alarm (lower limit)	
CPU2 +5.0vsAlm07	Amber	Blink	CPU module #2	5-V power voltage alarm (upper limit)	
CPU2 +5.0vsAlm09	Amber	Lit	CPU module #2	Fatal 5-V power voltage alarm (upper limit)	
CPU2 broken	Green	Blink	CPU module #2	CPU module breakdown	
CPU2 FAN Alm 01	Amber	Blink	CPU module #2	Cooling fan 1 alarm	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU2 FAN Alm 03	Amber	Blink	CPU module #2	Cooling fan 2 alarm	
CPU2 FAN Alm 04	Amber	Blink	CPU module #2	Cooling fan 3 alarm	
CPU2 offline	Green	Blink	CPU module #2	The CPU module has been logically disconnected.	Start the PCI module by ft sever utility or dismount and remount that module. If not solved by the above, contact your sales agent.

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
CPU2 removed	Green	Blink	CPU module #2	The CPU module has come off.	Dismount and remount the PCI module. If not solved by the above, contact your sales agent.
CPU2 Temp Alm 00	Amber	Blink	CPU module #2	Temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU2 Temp Alm 02	Amber	Lit	CPU module #2	Fatal temperature alarm (lower limit)	
CPU2 Temp Alm 07	Amber	Blink	CPU module #2	Temperature alarm (upper limit)	
CPU2 Temp Alm 09	Amber	Lit	CPU module #2	Fatal temperature alarm (upper limit)	
CPU2 VccpAlm 00	Amber	Blink	CPU module #2	CPU operating voltage alarm (lower limit) (VCCP)	Contact your sales agent.
CPU2 VccpAlm 02	Amber	Lit	CPU module #2	Fatal CPU operating voltage alarm (lower limit) (VCCP)	
CPU2 VccpAlm 07	Amber	Blink	CPU module #2	CPU operating voltage alarm (upper limit) (VCCP)	
CPU2 VccpAlm 09	Amber	Lit	CPU module #2	Fatal CPU operating voltage alarm (upper limit) (VCCP)	
CPU2 VttAlm 00	Amber	Blink	CPU module #2	1.25-V power voltage alarm (lower limit)	
CPU2 VttAlm 02	Amber	Lit	CPU module #2	Fatal 1.25-V power voltage alarm (lower limit)	
CPU2 VttAlm 07	Amber	Blink	CPU module #2	1.25-V power voltage alarm (upper limit)	
CPU2 VttAlm 09	Amber	Lit	CPU module #2	Fatal 1.25-V power voltage alarm (upper limit)	
CPU20 TempAlm 00	Amber	Blink	CPU module #2	CPU#1 temperature alarm (lower limit)	Check to see if dust is accumulated on the internal fans. Check also if the fan cables are connected securely. If not solved by the above, contact your sales agent.
CPU20 TempAlm 02	Amber	Lit	CPU module #2	Fatal CPU#1 temperature alarm (lower limit)	
CPU20 TempAlm 07	Amber	Blink	CPU module #2	CPU#1 temperature alarm (upper limit)	
CPU20 TempAlm 09	Amber	Lit	CPU module #2	Fatal CPU#1 temperature alarm (upper limit)	
CPU21 TempAlm 00	Amber	Blink	CPU module #2	CPU#2 temperature alarm (lower limit)	
CPU21 TempAlm 02	Amber	Lit	CPU module #2	Fatal CPU#2 temperature alarm (lower limit)	
CPU21 TempAlm 07	Amber	Blink	CPU module #2	CPU#2 temperature alarm (upper limit)	
CPU21 TempAlm 09	Amber	Lit	CPU module #2	Fatal CPU#2 temperature alarm (upper limit)	
= D =					
DUMP Request!	Off		-	DUMP switch request	Contact your sales agent.
= F =					
FRB Processing	Off		-	During POST execution or OS start processing	The server is operating normally.

Indication	STATUS LED		Suspected module	Explanation	Procedure
	Color	State			
= M =					
Memory U-Err 01	Green	Blink	CPU module #1	DIMM#1 2-bit error	The DIMM must be replaced. Contact a maintenance service company.
Memory U-Err 02	Green	Blink	CPU module #1	DIMM#2 2-bit error	
Memory U-Err 03	Green	Blink	CPU module #1	DIMM#3 2-bit error	
Memory U-Err 04	Green	Blink	CPU module #1	DIMM#4 2-bit error	
Memory U-Err 05	Green	Blink	CPU module #1	DIMM#5 2-bit error	
Memory U-Err 06	Green	Blink	CPU module #1	DIMM#6 2-bit error	
Memory U-Err 21	Green	Blink	CPU module #2	DIMM#1 2-bit error	
Memory U-Err 22	Green	Blink	CPU module #2	DIMM#2 2-bit error	
Memory U-Err 23	Green	Blink	CPU module #2	DIMM#3 2-bit error	
Memory U-Err 24	Green	Blink	CPU module #2	DIMM#4 2-bit error	
Memory U-Err 25	Green	Blink	CPU module #2	DIMM#5 2-bit error	
Memory U-Err 26	Green	Blink	CPU module #2	DIMM#6 2-bit error	
= O =					
OS shutdown Alm	Off		-	Shutdown due to a timeout error of the watch dog timer (fatal error)	Contact your sales agent.
= P =					
Power-off	Off		-	The DC power is turned off.	-
= S =					
SSR Processing	Off		-	Reboot processing for recovery	DUMP is being collected.
= W =					
WDT timeout	Off		-	Timeout error of the watch dog timer (fatal error)	Contact your sales agent.

POST Error Messages

Powering on the server automatically starts the self-diagnostic program, POST (Power On Self-Test). When POST detects any error, it displays an error message and its measure on the display unit. Follow the table below to troubleshoot such errors.



Message indicating a floppy disk drive error

TIPS: For error messages on optional PCI board, refer to the manual provided with those options.

On-screen error message	Cause	Action
0200 Failure Fixed Disk	• Configuration error in Setup menu. • Hard disk is faulty. • CPU module board is faulty. • PCI module board is faulty.	• Check configuration in Setup menu. • Replace the hard disk. • Replace the CPU module board. • Replace the PCI module board.
0210 Stuck Key	Keyboard connection error	• Disconnect the keyboard and connect it back again. • Replace the keyboard. • Replace the PCI module board.
0211 Keyboard error	Keyboard is faulty.	• Check the keyboard connection. • Restart the server. • Replace the PCI module board.
0212 Keyboard Controller Failed	Keyboard controller is faulty.	
0213 Keyboard locked - Unlock key switch	Keyboard is locked.	Unlock the key switch.
0220 Monitor type does not match CMOS - Run SETUP	Illegal monitor type is specified.	• Select "Get Default Value" from the Setup menu. • Clear the CMOS data.
0230 System RAM Failed at offset	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.
0231 Shadow RAM Failed at offset	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.

On-screen error message	Cause	Action
0232 Extend RAM Failed at address line	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.
0233 Memory type mixing detected	DIMMs of the different types are installed.	Replace DIMM with appropriate one.
0234 Single - bit ECC error	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.
0235 Multiple - bit ECC error	DIMM is faulty.	• Replace DIMM. • Replace the CPU module board.
0250 System battery is dead -Replace and run SETUP	NvRAM battery is dead.	Replace the PCI module board.
0251 System CMOS checksum bad-Default configuration used	NvRAM is faulty.	• Re-configure using the Setup menu. • Replace the PCI module board.
0252 Password checksum bad -Password cleared	NvRAM is faulty.	• Re-set the password in the Setup menu. • Replace the PCI module board.
0260 System timer error	PCI module board is faulty.	Replace the PCI module board.
0270 Real time clock error	RTC is faulty.	Replace the PCI module board.
0271 Check date and time setting	Date and time of RTC are incorrectly set.	• Set the correct date and time in Setup menu. • Replace the PCI module board.
0280 Previous boot incomplete -Default configuration used	Configuration error in Setup menu.	Check configuration in Setup menu.
02B0 Diskette drive A error	Floppy drive A is faulty.	Replace the floppy disk drive A.
02B2 Incorrect Drive A type - run SETUP	Configuration error in Setup menu.	Specify the correct drive type in Setup menu.
02D0 System cache error - Cache disabled	• CPU is faulty. • CPU module board is faulty.	• Replace the CPU. • Replace the CPU module board.
0B1B PCI System Error on Bus/Device/Function	PCI device is faulty.	• Replace the PCI board. • Re-install the PCI board. • Re-configure the PCI board. • Replace the PCI module board.
0B1C PCI Parity Error on Bus/Device/Function	PCI device is faulty.	
0B22 CPUs are installed out of order	CPU is faulty.	Replace the CPU.
0B28 Unsupported Processor detected on Processor 1	The processor (CPU) not supported by this server is installed in Processor 1.	Install the CPU appropriate to the server.

On-screen error message	Cause	Action
0B29 Unsupported Processor detected on Processor 2	The processor (CPU) not supported by this server is installed in Processor 2.	Install the CPU appropriate to the server.
0B30 CPU FAN #1 Alarm occurred 0B31 CPU FAN #2 Alarm occurred	• Dusts are clogged in fan. • Fan is faulty. • CPU module board is faulty.	• Replace the fan. • Replace the CPU module board. • Connect fan cable properly.
0B32 CPU FAN #3 Alarm occurred	• Dusts are clogged in fan. • Fan is faulty. • CPU module board is faulty.	• Replace the fan. • Replace the CPU module board. • Connect fan cable properly.
0B40 Invalid System Configuration Data	• Configuration error in SETUP. • CPU/PCI module board is faulty.	• Reset the setting by selecting [Yes] at [Reset Configuration Data] • Replace the CPU/PCI module board.
0B41 System Configuration Data Read error	• Configuration error in SETUP. • CPU/PCI module board is faulty.	• Reset the setting by selecting [Yes] at [Reset Configuration Data] • Replace the CPU/PCI module board.
0B42 Resource Conflict	Configuration error in SETUP.	Correct device configuration in SETUP
0B43 Warning: IRQ not configured	Configuration error in SETUP.	Correct settings in SETUP
0B44 Expansion Rom not initialized	Configuration error in SETUP.	In SETUP, disable decompression of expansion ROM on unnecessary optional PCI cards.
0B45 System Configuration Data Write error	• Configuration error in SETUP. • CPU/PCI module board is faulty.	• Reset the setting by selecting [Yes] at [Reset Configuration Data] • Replace the CPU/PCI module board.
0B47 Missing date and time synchronization	The date and time are incorrect due to a communication error between BMCs.	• Restart the system. • Re-set the date and time in SETUP. If the error persists, replace the PCI module board.
0B49 BMC Issued Reset Command, but failed System Reset	• System cannot be reset by BMC's reset command.	Replace PCI module board.
0B6E DIMMs are installed out of order	• DIMM is faulty.	Replace DIMM.
0B70 The error occurred during temperature sensor reading	• SMBus device is faulty. • SMBus is faulty.	Replace the CPU/PCI module or back panel board.

On-screen error message	Cause	Action
0B71 System temperature out of Range	• Ambient temperature is out of range. • Fan is faulty. • CPU/PCI module board is faulty.	• Check the setting in SETUP • Clean the fan. • Replace the fan. • Replace the CPU/PCI module board.
0B80 BMC Memory Test Failed	BMC is faulty.	Replace the PCI module board.
0B81 BMC Firmware Code Area CRC check failed		
0B82 BMC core Hardware failure		
0B83 BMC IBF or OBF check failed		
0B90 BMC Platform Information Area corrupted	BMC is faulty.	Replace the PCI module board.
0B91 BMC update firmware corrupted		
0B92 Internal Use Area of BMC FRU corrupted	• SROM is faulty. • BMC is faulty.	
0B93 BMC SDR Repository empty	BMC is faulty.	Replace the PCI module board.
0B94 IPMB signal lines do not respond		
0B95 BMC FRU device failure		
0B96 BMC SDR Repository failure		
0B97 BMC SEL device failure		
0B98 BMC SEL Overflow	SEL (System Event Log) overflowed.	Erase the unnecessary SEL.
0BB0 SMBIOS - SROM data read error	• SROM is faulty. • Back panel board is faulty.	Replace the back panel board.
0BB1 SMBIOS - SROM data checksum bad		
0BD0 1st SMBus device address not acknowledged	Board is faulty.	• Check cable connection. • Replace the board.
0BD1 1st SMBus device Error detected		
0BD2 1st SMBus timeout		
0BD3 2nd SMBus device address not acknowledged		
0BD4 2nd SMBus device Error detected		
0BD5 2nd SMBus timeout		
0BD6 3rd SMBus device address not acknowledged		

On-screen error message	Cause	Action
0BD7 3rd SMBus device Error detected	Board is faulty.	• Check cable connection. • Replace the board.
0BD8 3rd SMBus timeout		
0BD9 4th SMBus device address not acknowledged		
0BDA 4th SMBus device Error Detected		
0BDB 4th SMBus device timeout		
0BDC 5th SMBus device address not acknowledged		
0BDD 5th SMBus device Error detected		
0BDE 5th SMBus timeout		
0BDF 6th SMBus device address not acknowledged		
0BE0 6th SMBus device Error detected		
0BE1 5th SMBus timeout		
0BE2 7th SMBus device address not acknowledged		
0BE3 7th SMBus device Error detected		
0BE4 7th SMBus timeout		
0BE5 8th SMBus device address not acknowledged		
0BE6 8th SMBus device Error detected		
0BE7 8th SMBus timeout		
0BF0 Vendor ID cannot be retrieved from BP IDPROM	Back panel board is faulty.	Replace the back panel board.
0BF1 System Structure cannot be retrieved from BP IDPROM		
0C00 Rompilot reports error number xx	• Configuration error in SETUP. • CPU/PCI module board is faulty.	• Re-configure Rompilot. • Replace the CPU/PCI module board.
8600 No working DQS value found	• DIMM is faulty • DIMM is not supported	• Replace DIMM • Replace DIMM with appropriate one.
8610 MAC Address update failed – CoreI/O#010/100Mbit Ethernet Controller	FRB2 timeout occurred when setting MAC address, and rewrite was unsuccessful.	• Replace the back panel board. • Replace the PCI module board 1.

On-screen error message	Cause	Action
8611 MAC Address update failed – CoreI/O#0 Gbit Ethernet Controller	FRB2 timeout occurred when setting MAC address, and rewrite was unsuccessful.	• Replace the back panel board. • Replace the PCI module board 1.
8612 MAC Address update failed – CoreI/O#110/100 Mbit Ethernet Controller	FRB2 timeout occurred when setting MAC address, and rewrite was unsuccessful.	• Replace the back panel board. • Replace the PCI module board 2.
8613 MAC Address update failed – CoreI/O#1 Gbit Ethernet Controller	FRB2 timeout occurred when setting MAC address, and rewrite was unsuccessful.	• Replace the back panel board. • Replace the PCI module board 2.

Error Notification by BEEP

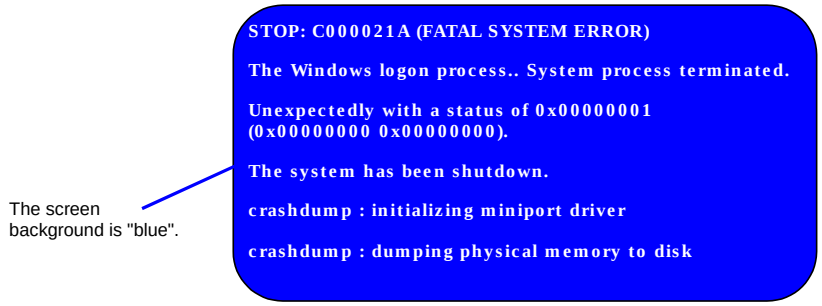
An error message may not be displayed on the display unit even though the POST detected an error. In such a case, the beep sounds notifies you an error. The error contents are indicated by the combination of beep sound patterns. For example, beep sounds once, consecutively three times, once, and then once (beep code: 1-3-1-1) indicates DRAM refresh test error.

The following table lists the meaning of beep codes and measures against them.

Beep code	Meaning	Action
1-2-2-3	ROM checksum error	Contact your sales agent to replace the CPU module board.
1-1-2-4	ROMEXEC code error	Check the installation of DIMM board. If the error persists, contact your sales agent to replace the DIMM or CPU module board.
1-3-1-1	DRAM refresh test error	
1-3-1-3	Keyboard controller error	Disconnect the keyboard and connect it back on. If the error persists, request your sales agent to replace the CPU module board.
1-3-3-1	Failed to detect memory. Or, DIMM board type is incorrect.	Check the installation of DIMM board. If the error persists, contact your sales agent to replace the DIMM or CPU module board.
1-3-3-2	Initial setting error of the POST memory manager	
1-3-4-1	RAM address error	
1-3-4-3	RAM low byte data error	
1-4-1-1	RAM high byte data error	
2-2-3-1	Illegal interrupt test error	Contact your sales agent.
2-1-2-3	Copyright check error	
1-2	Failed to initialize the video BIOS	Check the motherboard installation if nothing is displayed on the display unit. If the error persists, contact your sales agent to replace the CPU module board. Check the PCI board installation if the Option ROM of the added PCI board is not displayed. If the error persists, contact your sales agent to replace the CPU module board, PCI module board or added PCI board with new one.
	Failed to initialize the option ROM	
	Failed to expand the option ROM	

Windows Server 2003, Enterprise Edition Error Messages

If a fatal error (e.g., a STOP or system error) occurs after Windows Server 2003, Enterprise Edition starts, the screen of the display unit turns blue and displays detailed error messages.


STOP: C000021A (FATAL SYSTEM ERROR)
The Windows logon process.. System process terminated.
Unexpectedly with a status of 0x00000001 (0x00000000 0x00000000).
The system has been shutdown.
crashdump : initializing miniport driver
crashdump : dumping physical memory to disk
The screen background is "blue".

Take notes of the messages displayed on the screen, and call your sales agent.

If a fatal error occurs, the server automatically executes memory dump processing and saves the memory dump data in an arbitrary directory. (See the end of this chapter) The maintenance personnel of your sales agent may ask you to provide this data. Thus, copy the file into a medium (e.g., DAT) to be ready to pass it to the maintenance personnel.

IMPORTANT: A message may appear indicating that virtual memory is insufficient when you restart the system after a STOP or system error has occurred. Ignore the message and start the system.

TIPS: Before copying the file into a medium, start the Event Viewer to confirm that the Save Dump event log is included in the system event logs and the memory dump has been saved.

The following message may be displayed during usage.

> "Your system is low on virtual memory. To ensure that Windows runs properly, increase the size of your virtual memory paging file. For more information, see Help."

When this message is displayed, extend a physical memory following the procedure below.

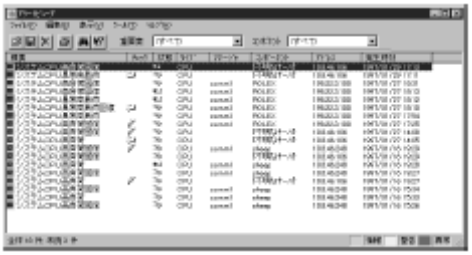
1. Add a physical memory
2. Change the configuration of the paging file (Change more than < physical memory capacity × 1.5 >)

The system also displays a warning message if an internal device or peripheral equipment (e.g., disk, network, or printer) encounters an error. Take notes of the message, and call your sales agent.

Server Management Application Error Message

If the server management tool such as NEC ESMPRO Agent, NEC ESMPRO Manager, or GAMServer has been installed in the NEC Express5800/ft series or management PC, you can obtain the error information from the display unit of the server or management PC.

See Chapter 5 or online documentation for details of such application programs.



SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the given instruction before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your sales agent.

Problems with NEC Express5800/ft series

Fail to power on the server:

- ☐ Is the server properly supplied with power?

  → Check if the power cord is connected to a power outlet (or UPS) that meets the power specifications for the server.

  → Check if the two pieces of the provided power cord are connected to the main unit properly.

  → Make sure to use the power cord provided with the server. Check the power cord for broken shield or bent plugs.

  → Make sure the power breaker for the connected power outlet is on.

  → If the power cord is plugged to a UPS, make sure the UPS is powered and it supplies power. See the manual that comes with the UPS for details.

  Power supply to the server may be linked with the connected UPS using the BIOS setup utility of the server.

  <Menu to check: [System Hardware] → [AC-LINK] → [Power On]>

  → Make sure the POWER switch on the power unit is on.

- ☐ Did you press the POWER switch?

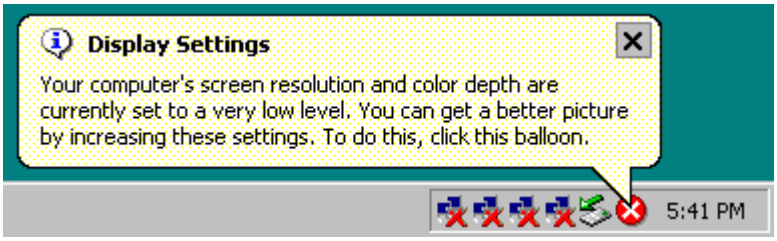
  → Press the POWER switch on the front of the NEC Express5800/ft series to turn on the power (the POWER LED lights).

- ☐ Did you install the CPU/PCI module properly?

  → Check if the CPU/PCI module is properly installed in the server. Secure the module with screw located on the module handle.

"Display Settings" on the bottom-right of the window:

→ Select [Control Panel] – [Display] - [Settings] tab, and change the [Color quality] to "Medium (16 bit)" or higher.


Display Settings
Your computer's screen resolution and color depth are currently set to a very low level. You can get a better picture by increasing these settings. To do this, click this balloon.
5:41 PM

The screen turns blue during OS boot:

→ Wait for the period of time you set at BIOS [Boot Monitoring]; after the boot pair is automatically swapped, the server will be rebooted and the OS will start up.

→ Start the OS from the other PCI module's hard disk.

Fail to power off the server:

☐ Is the POWER switch enabled?

→ Restart the server and start the BIOS setup utility.

<Menu to check: [Security] → [Power Switch Mask] → [Unmasked]>

POST fails to complete:

☐ Is the DIMM installed?

→ At least one DIMM is required for operation.

☐ Is the memory size large?

→ The memory check may take a time if the memory size is large. Wait for a while.

☐ Did you perform any keyboard or mouse operation immediately after you started the server?

→ If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.

☐ Does the server have appropriate memory boards or PCI card?

→ Operation of the server with unauthorized devices is not guaranteed.

Fail to access to internal or external devices:

- ☐ Are cables properly connected?

  → Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.

- ☐ Is that device compliant with NEC Express5800/ft series?

  → Operation of the server with unauthorized devices is not guaranteed.

- ☐ Is the power-on order correct?

  → When the server has any external devices connected, power on the external devices first, then the server.

- ☐ Did you install drivers for connected optional devices?

  → Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.

  → Some optional devices connected to the serial port require settings for I/O port address and operation mode. Refer to the manual that comes with the device to configure the device.

  <Menu to check: [Advanced] → [Peripheral Configuration]>

- ☐ Is SCSI controller (including options) configuration correct?

  → If the sever has an optional SCSI controller board and SCSI devices are hooked up to the server, make correct settings by the SCSI controller board's SCSI BIOS utility. For details, see manuals included with the SCSI controller board.

- ☐ Is SCSI device configuration correct?

  → If external SCSI devices are connected to the server, you need to make settings of SCSI ID and terminal resistance. For details, see manuals included with the SCSI device.

CPU not in Dual mode:

→ Check if the memory configuration is correct.

→ Check if third-party CPUs or memory (DIMM) are used.

Disk not in Dual mode:

→ Unless you perform mirroring (including reconfiguration after failed disks are replaced) in correct order, the mirror may not be [re]configured. Check if the steps were correct.

The keyboard or mouse fails to operate:

- ☐ Is the cable properly connected?

  → Make sure that the cable is connected to the correct connector on the rear of the server.

- ☐ Are the keyboard and mouse are compliant with NEC Express5800/ft series?

  → Operation of the server with unauthorized devices is not guaranteed.

- ☐ Is BIOS configuration correct?

  → The keyboard and mouse may be disabled with the BIOS setup utility of the server. Check the settings with the BIOS setup utility.

  <Menu to check: [Advanced] → [Keyboard Features]>

- ☐ Does the server have drivers installed?

  → Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

- ☐ Are you using a PS2-USB conversion connector?

  → The PS2-USB conversion connector is not supported. Use the keyboard and mouse that are specified by NEC.

Screen freezes, keyboard and mouse don’t work:

→ If the amount of memory is large, it takes time to copy the memory in dual mode and the system stops working during the copying. It’s not system trouble.

Message “New Hardware Found” appears:

→ Such a message may appear at the system startup or when a PCI module is replaced and incorporated into the system. This is due to the server’s operating specifications and does not pose any problem.

Fail to access (read or write) to the floppy disk:

- ☐ Does the floppy disk drive contain a floppy disk?

  → Insert a floppy disk into the floppy disk drive until it clicks.

- ☐ Is the floppy disk write-protected?

  → Place the write-protect switch on the floppy disk to the "Write-enabled" position.

- ☐ Is the floppy disk formatted?

  → Use a formatted floppy disk or format the floppy disk in the floppy disk drive. Refer to the manual that comes with the OS for formatting a floppy disk.

Fail to access to the CD-ROM:

- ☐ Is the CD-ROM properly set in the CD-ROM drive tray?

  → The tray is provided with a holder to secure the CD-ROM. Make sure that the CD-ROM is placed properly in the holder.

- ☐ Is the CD-ROM applicable to the server?

  → The CD-ROM for Macintosh is not available for use.

- ☐ Is the CD-ROM on the PCI module whose POWER switch is on (primary module)?

  → Although there are two CD-ROM drives, you can only use the one located on the primary module whose POWER switch is on.

Fail to access the hard disk:

- ☐ Is the hard disk applicable to the server?

  → Operation of any device that is not authorized by NEC is not guaranteed.

- ☐ Is the hard disk properly installed?

→ Make sure to lock the hard disk with the lever on its handle. The hard disk is not connected to the internal connector when it is not completely installed (see Chapter 8). When the hard disk is properly installed, the drive power LED for the hard disk is lit while the server is powered.

Fail to start the OS:

- ☐ Is a floppy disk in the floppy disk drive?

  → Take out the floppy disk and restart the server.

- ☐ Is the NEC EXPRESSBUILDER CD-ROM (or the other bootable CD-ROM) in the CD-ROM drive?

  → Take out the CD-ROM and restart the server.

- ☐ Is the OS damaged?

  → Use the recovery process of the OS to attempt to recover the damaged OS.

OS behavior is unstable:

- ☐ Have you updated your system?

  → If you install a network driver after installing the OS, the OS may become unstable. For update procedure, see the separate volume “User’s Guide (Setup).”

The system does not operate according to the configured settings of "Automatic Restart" at the occurrence of error:

→ The system may or may not restart automatically even if the "Automatic Restart" settings are made at occurrence of an error is set. If the system does not restart automatically, restart it in manual mode.

The power cannot be turned off while the blue screen of Windows Server 2003, Enterprise Edition is displayed:

→ The forced power-off (forced shutdown) procedure is necessary to turn off the power with the blue screen displayed. Keep pressing the POWER switch for 4 seconds. Pressing the POWER switch only once does not turn off the power in this case.

The server is not found on the network:

☐ Is the LAN cable connected?

→ Make sure to connect the LAN cable to the network port on the rear of the server. Also make sure to use the LAN cable that conforms to the network interface standard.

☐ Is BIOS configuration correct?

→ The internal LAN controller may be disabled with the BIOS setup utility of the server. Check the setting with the BIOS setup utility.

<Menu to check: [Advanced] → [Option Rom] → [On Board LAN]>

☐ Have the protocol and service already configured?

→ Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

☐ Is the transfer speed correct?

→ Open the [Network Property] dialog box in Control Panel to specify the “Link Speed & Duplex” value the same as the value specified for HUB.
Transfer speed can be fixed by PROSet II.
Select an adapter to modify the setting from the tree on the left, for 100Base adapter, click the [Advanced] tab and make settings at “Link Speed & Duplex”.
For 1000Base-T adapter click the [Link Config] tab.
Select [Enabled] "Auto Negotiation" and specify the transfer speed at "Negotiable Speed and Duplexes".
(Only check the transfer speed to use.)

Icon of drive A is changed to that of removal disk:

→ Does not cause any problem.

WMI log is recorded in the application event log:

When you view the Application Event Viewer log on your computer, one or more of the following events may be logged. This has no effect on the functionality of VERITAS Volume Manager.

Source:	WinMgmt
ID:	41
Description:	WMI ADAP was unable to create object index 2902 for Performance Library vxio because no value was found in the 009 subkey.

Failure in CPU module duplication:

→ If the simultaneous replacement of the CPU and PCI modules causes the CPU and PCI modules to control duplication, the CPU module duplication may fail with the following message saved in the system event log. If so, the system can be recovered from the failure starting the CPU module with ft server utility or by reinserting the CPU module.

Source: srabid
ID: 16474
Description: Diagnostics failure of 2: 'CPU Get Chipset Info' (0xf026,0x0,0x0).

Disk information is not correct on VERITAS Enterprise Administrator after system starts:

→ If the primary PCI cannot access the FC disk, the disk information may not be displayed correctly. In this case, run "Action/Update" or "Action/Rescan."

If the information is not displayed correctly even after the above step, check the connection between the module and disk.

"Stratus Fault Tolerant Virtual 69000 Video" is displayed on "Remove Hardware" dialog box:

→ If you double-click an icon "Remove Hardware" on the system tray, two "Stratus Fault Tolerant Virtual 69000 Videos" will appear. Do not remove them. Otherwise, the connected PCI modules will be disconnected forcefully and the system may operate normally.

Machine repeats rebooting at startup:

☐ Is CHKDSK executed at machine startup?

→ Open the utility of the BIOS setup at rebooting and change the following settings:

(Change BIOS settings)
Change [Advanced] - [Monitoring Configuration] - [Boot Monitoring] to [Disable].
(For details, see page 4-15 "Monitoring Configuration".)

* After completion of CHKDSK, restart the machine and change the above setting back to [Enable] and continue the operation.

CHKDSK is executed in the following conditions:
(1) CHKDSK is scheduled to be executed at next system startup
(2) Corruption of file system is detected since the previous startup until shutdown
(3) Inconsistency (corruption) of file system is detected while mouting at system startup

☐ Is the value of [Boot Monitoring Time-out Period] in the BIOS setting appropriate?

→ Change the value of [Boot Monitoring Time-out Period] to suit your environment.

(For details, see page 4-15 “Monitoring Configuration”.)

Mouse Does Not Move Smoothly, And Drawing Graphics Takes Time:

☐ Is the hardware acceleration set to Full?

→ Set it to “None”.

Make sure to set the hardware acceleration to None in NEC Express5800/ft series (Default: None).

(How to check and change the hardware acceleration setting)
Select the [Start] - [Control Panel] - [Display] – [Settings] tab – [Advanced]. “Plug&Play Monitor and Stratus Virtual Video Properties” is displayed. Select the [Troubleshoot] tab and check the hardware acceleration setting.

CPU load ratio of SNMP Service (snmp.exe) increases:

→ While monitoring the server from NEC ESMPRO Manager, the CPU load ratio of SNMP Service on the NEC ESMPRO Agent side may increase at every monitoring interval (default: 1 minute).

NEC ESMPRO Manager and NEC ESMPRO Agent exchange information through SNMP Service.
If the server status monitoring by NEC ESMPRO Manager is on (default: ON), NEC ESMPRO Manager regularly issues a request to NEC ESMPRO Agent to get the current status of the server. In response, NEC ESMPRO Agent checks the status of the server. As a result, the CPU load ratio of SNMP Service increases temporarily.
If you have trouble of terminating a movie player application, turn off the server status monitoring by NEC ESMPRO Manager or extend the monitoring interval.

Hang of SNMP Service occurs:

→ SNMP Service has a module called "SNMP Extended Agent." This module may be registered when you install some software that uses SNMP Service.

If you start SNMP Service, SNMP Extended Agent is also loaded at the initialization. However, if the initialization is not completed within a specified period, SNMP Service will hang.
It may take time to complete the initialization due to temporary high load on the system. In this case, wait for the system load become low enough before restarting SNMP Service.

A CPU/PCI module cannot be integrated:

→ When a component fails and is reintegrated, the following message may be recorded to the system event log and the process is stopped. Such event indicates that the component’s MTBF is below the threshold and it is judged that repair is necessary. Thus the reintegration process cannot be completed. Generally replacement of the component will be required, so contact your sales representative. If reintegrating the component without repair is required for some

reason, consult your sales agent. It is possible to perform reintegration forcefully.

Source: srabid
ID: 16395
Description: x is now STATE_BROKEN / REASON_BELLOW_MTBF ("x" is a device number.)

An unavailable disk is displayed on Disk Management:

→ Follow the instructions on the table below:

Disk status	Description	Action
	[Foreign] appears when loading a dynamic disk which has been used in a different system.	**[To use the disk's data]** Referring to Chapter 3 "Windows Setup and Operation", import the disk. **[To change the disk to an available disk]** To use this disk, it needs to be initialized. It will become available after initialization. **<Note>** Initialization erases all data on the disk. If there is important data, back up data before initialization.
	[Missing] appears when a dynamic disk is damaged or removed.	If there is a volume on the missing disk, break the mirror on that disk. Then right-click the [Missing] disk and perform [Remove disk].
	[Not Initialized] appears when the disk is not signed.	Right-click the disk and perform [Initialize Disk]. The disk will become available.

Primary PCI module's status LED2 and DISK ACCESS LED illuminate amber after startup:

☐ Is the mirroring of the hard disks broken?

→ See [Disk Management] and if the mirror is broken, reconfigure it.
For mirroring configuration, see "DISK OPERATIONS" in Chapter 3 "Windows Setup Operation."

Other than disk failure, the mirror may be removed at startup after the following operations:

- Started the server after shutdown with the PCI module in simplex mode
- Started NEC Express5800/ft series when the BMC status LED was blinking

The duplication process of Baseboard Management Controller (BMC) is executed

immediately after turning on the AC power, or mounting a PCI module. The mirror of a disk may be removed if you turn on the power and start the server before or during the duplication process. Make sure to start the server after the duplication process of BMC is completed.
You can check the status of the duplication process from BMC status LED of PCI module on mounted side.

- Illuminating red: Yet to be duplicated
- Blinking in red: In the process of duplication
- Off: Duplication is completed

See "LEDs" in Chapter 2 "General Description" for details of the BMC status LED.

Memory dump (debug information) cannot be collected at a failure occurrence:

☐ Is there any available space at the memory dump storage location?

→ Specify a drive in which there is an available storage space of greater than a memory size on the server plus 12 MB (more than 2048 + 12MB if a memory size is more than 2GB).
For details, see "Set Memory Dump (Debug Information)" of "Step 12: Set up Failure Management" in Chapter 4 "Windows Setup" in the separate User's Guide for setup.

☐ Is [Initial size] of the paging file of the OS partition smaller than [Recommended]?

→ If a value smaller than the [Recommended] value is set for [Initial Size] of the paging file, accurate memory dump (debug information) may not be collected. Be sure to create the file in the above size in the OS partition.
For details, see "Set Memory Dump (Debug Information)" of "Step 12: Set up Failure Management" in Chapter 4 "Windows Setup" in the separate User's Guide for setup.

Event Log

Perflib-related logs are recorded in the application event log when system starting:

→ When system is starting, Perflib log may be registered to the application log.

The detailed information about an event log is described on Microsoft Product Support Services. Please check the contents.

- [INFO] Events for Performance Monitor Extensions
  http://support.microsoft.com/default.aspx?scid=kb;en-us;226494
- Application Log Events Generated When You Start Performance Counter Query
  http://support.microsoft.com/default.aspx?scid=kb;en-us;296187
- Event ID 2003 Warning Message Logged When Loading Performance Counters
  http://support.microsoft.com/default.aspx?scid=kb;en-us;267831

Visit the Microsoft Help and Support on regular basis where you can find other information than the above at:
http://support.microsoft.com/default.aspx?LN=en-us.

"The NMS Service terminated unexpectedly." is recorded in the system event log:

→ Although the following log may be recorded in the system event log when starting the system, or after exchanging PCI modules, there is no real problem on operation. Change of a setup with PROSet II will become invalid if NMS service stops, but you can change a setup normally because NMS service will be automatically started when PROSet II is started.

"Source: Service Control Manager
Event ID: 7031
Description: The NMS service terminated unexpectedly. This has occurred 1 time(s). The following corrective action will be taken in 0 milliseconds: No action."

iANSMiniport-related logs are recorded in the system event log:

→ Although the following log may be recorded in the system event log when starting the system, there is no real problem on operation (In the description, "X" represents a number).

"Source: iANSMiniport
Event ID: 35
Description: Initializing Team #X missing adapters. Check the configuration to verify that all the adapters are present and functioning."

→ The logs of the source "iANSMiniport" are the logs about the duplex of the network. The following logs may be recorded in the system event log when starting the system (In the description, "X" represents a number).

"Source: iANSMiniport
Event ID: 11
Description: Adapter link down: Stratus emb-82544GC Copper Gigabit Adapter."

"Source: iANSMiniport
Event ID: 11
Description: Adapter link down: Stratus emb-82544GC Copper Gigabit Adapter #2."

"Source: iANSMiniport
Event ID: 13
Description: Secondary Adapter is deactivated from the Team: Stratus emb-82544GC Copper Gigabit Adapter #2."

"Source: iANSMiniport
Event ID: 16
Description: Team #X: The last adapter has lost link. Network connection has been lost."

"Source: iANSMiniport
Event ID: 35
Description: Initializing Team #X missing adapters. Check the configuration to verify that all the adapters are present and functioning."

If the following logs are recorded after the above logs are recorded, there is no real problem on operation by the above errors or warnings. When the following logs are not recorded, if the log of the source "sragbe" is not recorded, there is no real problem on operation by the above errors or warnings.

"Source: iANSMiniport
Event ID: 14
Description: Secondary Adapter has rejoined the Team: Stratus emb-82544GC Copper Gigabit Adapter."

"Source: iANSMiniport
Event ID: 15
Description: Adapter link up: Stratus emb-82544GC Copper Gigabit Adapter."

"Source: iANSMiniport
Event ID: 17
Description: Team #X: An adapter has re-established link. Network connection has been restored."

ESMCpuPerf-related logs are recorded in the system event log:

→ If NEC ESMPRO Agent cannot get performance information from the OS due to a temporary resource shortage or high load ratio on the system, it will record the following event log. However, there is no real problem on operation (In the description, Y and Xrepresent alphanumeric characters).

Source: ESMCpuPerf
Event ID: 9005
Description: Cannot get system performance information now (YYYY Code=xxxx).

If NEC ESMPRO Agent cannot get information, it will treat the load ratio as 0%. So, if NEC ESMPRO Agent cannot get information continuously, the CPU load ratio may appear lower than the actual value.

EvntAgnt log is recorded in the application event log:

→ This event does not have any influence on the system, not on SNMP services. Thus no measurement is required.

Source: EvntAgnt
ID: 1003
Description: TraceFileName parameter not located in registry; Default trace file used is .

Source: EvntAgnt
ID: 1015
Description: TraceLevel parameter not located in registry; Default trace level used is 32.

SCSI control error appears in the system event log:

→ There is sometimes a case that SCSI control error that has a source of sraq160 appears in the system event log. This symptom occurs when the processing speed of HDDs is slower than the request from the operating system, and the process will be continued properly by the retry function. Since this does not affect any operations, check the detailed data as described below and ignore that log if the data is either “f0030004” or “f0030015”.

However, if the SCSI control error in the detailed data above repeatedly shows either “f0030004” or “f0030015” (more than 10 times a week as an indication), the HDD failure can be occurring. Contact your maintenance service company.

Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER CD-ROM, check the following:

- ☐ Did you set the NEC EXPRESSBUILDER CD-ROM during POST and restart the server?

  → If you do not set the NEC EXPRESSBUILDER CD-ROM during POST and restart the server, an error message will appear or the OS will boot.

- ☐ Is BIOS configuration correct?

  → The boot device order may be specified with the BIOS setup utility of the server. Use the BIOS setup utility to change the boot device order to boot the system from the CD-ROM drive first.

  <Menu to check: [Boot]>

When an error occurs while the NEC EXPRESSBUILDER is in progress, the following message appears. After this message appears, check the error and take the appropriate corrective action according to the error codes listed in the table below.

Message	Cause and Remedy
This machine is not supported.	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
NvRAM access error	An access to the nonvolatile memory (NvRAM) is not acceptable.
Hard disk access error	The hard disk is not connected or it is failed. Check whether the hard disk is correctly connected.

An error message will also be displayed when an error was detected during system diagnosis. Take a note or print the error message displayed, and contact your sales agent.

Problems with Master Control Menu

Failed to read online documentation:

- ☐ Is HTML browser installed properly?

  → Online documentation is an HTML-format file. Install the HTML browser (Internet Explorer 5.x or later) in your operating system.

- ☐ Is HTML file properly associated to the browser software?

  → Online documentation accesses the local files in CD-ROM.

  If the extension of HTML file (.htm or .html) is not associated to your browser correctly, the local HTML file may not be browsed from Internet Explorer or the other applications. Initialize your browser and set the association of extension (.htm or .html) correctly.

- ☐ Is Adobe Acrobat Reader installed properly?

  → A part of online documentation is supplied in PDF file format. Install the Adobe Acrobat Reader (Version 4.05 or later) in your operating system. You can also install the Adobe Acrobat Reader using the NEC EXPRESSBUILDER CD-ROM. Launch the Master Control Menu and select [Setup] → [Adobe Acrobat Reader].

Image of online documentation is not clear:

- ☐ Is your display unit set to display 256 colors or more?

  → Set the display unit to display 256 colors or more.

The master control menu fails to appear:

- ☐ Is your system Windows NT 4.0 or later, or Windows 95 or later?

  → The CD-ROM Autorun feature is supported by Windows NT 4.0 and Windows 95. The older versions do not automatically start from the CD-ROM.

- ☐ Is **Shift** pressed?

  → Setting the CD-ROM with **Shift** pressed down cancels the Autorun feature.

- ☐ Is the system in the proper state?

  → The menu may not appear depending on the system registry setting or the timing to set the CD-ROM. In such a case, start the Internet Explorer and run \MC\1ST.EXE in the CD-ROM.

Problems with NEC ESMPRO

NEC ESMPRO Manager

→ See Chapter 5. See also online document in NEC EXPRESSBUILDER CD-ROM for troubleshooting and other supplementary information.

NEC ESMPRO Manager cannot receive trap from NEC ESMPRO Agent:

→ To change the community name of traps to be received from the default "public" in the NEC ESMPRO Manager site, enter the same name as the community name newly set in the NEC ESMPRO Manager site.

To receive trap from NEC ESMPRO Agent at the NEC ESMPRO Manager machine, both community names should be the same.

NEC ESMPRO Manager report alert from NEC ESMPRO Agent doubly:

→ If the IP address (or host name) of the remote NEC ESMPRO Manager specified as the trap send destination in the setup of the manager report (TCP/IP), the message warning the duplication appears. The specification of the same NEC ESMPRO Manager causes to be reported doubly.

NEC ESMPRO Manager cannot monitor NEC ESMPRO Agent:

→ If you entered any community name other than "public" in the [Community name] box in the [Traps] property sheet, add that name to "Accepted community names" refer to the users guide (setup) of a separate volume.

→ Unless you set the acceptable community's authority to "READ CREATE" or "READ WRITE," you cannot perform monitoring from NEC ESMPRO Manager.

NEC ESMPRO Agent cannot receive SNMP packets sent from NEC ESMPRO Manager:

→ If the community name is changed, the community of NEC ESMPRO Agent is changed and registered by starting from [Control Panel]. Change registration in the following steps.

1. Double-click the [NEC ESMPRO Agent] icon in [Control Panel].
2. Select a desired community name from the [SNMP Community] list box in [SNMP Setting] of the [General] sheet.

   The community names to receive SNMP packets from are listed in the [SNMP Community] list box.
3. Click [OK] to terminate the operation.

   To allow NEC ESMPRO Agent to receive SNMP packets sent from NEC ESMPRO Manager, set the send community name in NEC ESMPRO

Manager to be the same as that accepted by the SNMP Service in NEC ESMPRO Agent.

NEC ESMPRO Agent cannot perform correctly:

→ If the SNMP Service is added after adaptation of the service pack in installation of OS, adapt the service pack again. If not, the SNMP Service may not operate correctly. This then disables NEC ESMPRO Agent to be operated.

→ The SNMP Service is required for operating NEC ESMPRO Agent.

If the SNMP Service is deleted after the installation of NEC ESMPRO Agent, install the SNMP Service and then reinstall NEC ESMPRO Agent.

→ Some software products provided by other vendors use the SNMP Service.

If the SNMP Service and NEC ESMPRO Agent are installed in the system in which such software as above is installed, it may be impossible to start NEC ESMPRO Agent services. If so, delete the SNMP Service once and install the service again. After which, reinstall NEC ESMPRO Agent and the other vendor's software.

Total Status of the PCI Module

→ When each module's status is simplex, the total status of the PCI module displayed on the Data Viewer is yellow (warning) and the status will be reflected to the server status. The ft control software 3.0 or later does not display the information on Ethernet or SCSI adapter on the tree of the Data Viewer. If an error occurs on an Ethernet or SCSI adapter, view the alert reports.

Unknown or incorrect information appears in CPU information:

→ If you select [CPU Module]-[CPU] in the FTServer tree of the data viewer, unknown or incorrect information appears in some information items.

The CPU information can be viewed by selecting [System]-[CPU] in the NEC ESMPRO MIB tree.

The message prompting you to reconstruct the tree of the data viewer will appear:

→ If you dynamically change the configuration of the CPU or PCI module in the relevant system during review of the server information by using the data viewer, the message prompting you to reconstruct the tree of the data viewer will appear. If you click the [Yes] button, the tree is reconstructed in the data viewer to reflect the change of the system configuration on the data viewer.

Clicking the [No] button does not cause the tree to be reconstructed in the data viewer. If so, the information in the data viewer may be different from the current system information because the change of the system configuration is not reflected on the data viewer.

The incorrect information is displayed on SCSI slot information:

→ When the PCI module is detached and you select [SCSI Slot]-[General], the displayed "Hardware LED" information may not be correct. To check the status of SCSI slots, see the string information in the "Status" column.

The LAN monitoring function report a line fault or high line load:

→ The LAN monitoring function defines the line status depending on the number of transmission packets and the number of packet errors within a certain period. Thus, the LAN monitoring function may report a line fault or high line load only in a temporary high line impedance state. If a normal state recovery is reported immediately, temporal high line impedance may have occurred thus there is not any problem.

LAN monitoring threshold is not used:

→ Because the NEC Express5800/ft series detects hardware faults on the network in the driver level, NEC ESMPRO Agent does not monitor line faults.

Thus, the value set for "Line fault occurrence rate" of a [LAN] tab of [NEC ESMPRO Agent properties] in the control panel is not used.

The remote shutdown and threshold change functions cannot be used via NEC ESMPRO Manager:

→ Depending on your OS type or its version, settings for community, SNMP service's security function, are not made, or default settings of authority are different.

To enable the remote shutdown and threshold change functions via NEC ESMPRO Manager, make settings of community and set its authority to "READ CREATE" or "READ WRITE."

NEC ESMPRO Manager cannot monitor in Sleep State:

→ NEC ESMPRO Manager cannot monitor the NEC ESMPRO Agent machine in the sleep state (system standby or system halt state).

While NEC ESMPRO Manager monitors server shutdown, the relevant NEC ESMPRO Agent machine may be entered into the sleep state. If so, the report "server access disabled" is issued and the status color of the server icon becomes gray.

This cannot indicate whether the NEC ESMPRO Agent machine is shut down or entered into the sleep state. Keep these in mind when operating the system where systems to be monitored may enter the sleep state.

Some items cannot be monitored with NEC ESMPRO Manager:

→ Some items cannot be monitored with NEC ESMPRO Manager of version 4.0 or earlier.

NEC ESMPRO Manager Ver.4.1 is registered in NEC EXPRESSBUILDER CD-ROM. Use the NEC ESMPRO Manager Ver.4.1.

The incorrect information appears on the printer information's available time:

→ When you add a new printer, install its driver and make its settings, if you do not make settings for the available time from Add Printer Wizard, the printer's available time (From and To) in [Printers and Faxes] are [00:00], on the other hand, Manager's time are [9:00]. To display them properly, make the settings of printer from [Printers and Faxes].

The procedures are as follows:

1. Start [Printers and Faxes], and open the printer properties you want to make settings for. (Select the [Printers and Faxes], right-click and select [Properties].)
2. Select the [Advanced] tab.
3. Enter values in the available time (From and To), and click [OK] in the [Advanced] and [Properties] dialog boxes.

Now, you can see the correct information from Manager, too.

Disk Maintenance While NEC ESMPRO Agent is Running:

→ The following works to disks (hard disk drive or magneto optical) are not allowed while NEC ESMPRO Agent is running;

- To format or delete a partition by Disk Administrator or by other means.
- To request programmatically to remove media from removable disks such as MO, Zip and PD.

1. Select the [Start] - [Settings] - [Control Panel].
2. Open the [Service].
3. Select a service named "ESMCommonService", and click the [Stop].
4. Confirm that "ESMCommonService" stopped, and close the [Service].
5. Do the disk-related works.
6. Open the [Service] again, select "ESMCommonService" and click the [Start].
7. Confirm that "ESMCommonService" is active and close the [Service] and [Control Panel].

Change the threshold of temperature, voltage and fan sensors:

→ From NEC ESMPRO Agent, the display / the change of the threshold of temperature, voltage, fan cannot be performed. However, there are some which can perform only the display of a threshold in the data viewer of NEC ESMPRO Manager depending on a model. NEC ESMPRO Agent is supervising by the optimal threshold set up from each model.

The incorrect information appears on Current Status of Temperature, Voltage and Fan Sensors:

→ The temperature / voltage / fan sensor which does not have information, such as a state, the present value, number of rotations, and a threshold, depending on a model exist. Therefore, keep in mind when an applicable sensor is referred to by NEC ESMPRO Manager, displayed as follows.

- A state is displayed to be "unknown" on a data viewer (indicated by gray).
- The present value and number of rotations are displayed to be "unknown" on a data viewer.
- A state is displayed in grey on the data viewer of a Web component.
- Nothing is displayed about the present value or number of rotations on the data viewer of a Web component.

Even if displayed as mentioned above, monitoring is performed and there is no problem.

Temperature/Voltage Error Occurs on CPU/PCI Modules:

→ At the time when a temperature or voltage error occurs on CPU/PCI module, necessary actions will differ depending on their status as shown below. You can check the status of each module from the Data Viewer of NEC ESMPRO Manager or the ft server utility.

Status	Actions
Duplex	Stop the failed CPU/PCI module.
Simplex	Shut down the system.
Other than duplex or simplex	No action is required.

Monitoring of shutdown:

→ When monitoring shutdown, all shutdown processing serves as the candidate for monitoring. If there is application which uses a shutdown which is not accompanied by reboot of OS or power supply OFF, set up the timeout-time for a long time, or turn OFF monitoring.

The external clock of CPU information is listed as "Unknown":

→ In [CPU Information] of Data Viewer's system tree, the external clock is listed as "Unknown."

[ft Server] Tree Appears on Date Viewer in an Incorrect Manner:

→ If you open a Data Viewer immediately after the system starts up, the tree or the state of a Data Viewer may not be displayed correctly due to high load of the system. In about 20 minutes after the system startup, when a pop-up message (below) which prompts you to reconstruct a Data Viewer appears, click [OK]. The Data Viewer will be reconstructed and the tree and the status will be displayed correctly.

Data Viewer

The system configuration of the host may have been changed. Do you wish to reconstruct the tree?

The incorrect information appears on floppy disk drive:

→ After unplugging and plugging the PCI module of the primary side, the floppy disk drive name of [I/O Device] on Data Viewer may be different from the name that is recognized by the OS.

(Example: drive name on Data Viewer: "A", drive name recognized by the OS: "B")

Check the floppy disk drive name on Explorer.

→ If you add or delete floppy disk drive connected with USB while the system is running, the drive information under the [I/O Device] in the data viewer will be updated at the next system startup.

The displayed BIOS data is incorrect:

→ BIOS additional data may not be displayed properly in [BIOS Information] of a CPU Module of the ft server utility or in [Ft Server]-[CPU Module]-[Individual CPU Module]-[General]-[BIOS Information] of Data Viewer.

In this case, see the data in [ESMMIB]-[BIOS] of Data Viewer.

The displayed status of Ethernet adapter is error:

→ If an Ethernet adapter is not used (not connected to cable), set it to "Disable" in [Network Connections] from Control Panel. If an Ethernet adapter you are about to disable has dual LAN settings (AFT function), remove the dual LAN settings before disable it.

NEC ESMPRO Agent cannot perform correctly by coexistence with the Oracle products:

→ The installation of the Oracle products may change Startup Type of SNMP Service into "Manual". If so, change the setting back to "Automatic" and set up correctly according to the description of the Oracle product.

A modular state is displayed as "fault":

→ PCI modules, SCSI adapters, SCSI buses, and modules under the SCSI enclosure have impact on each other. For example, when the “Status” item of a module changes to “fault,” it may be caused by another module’s error. Therefore, you need to check the status of the other modules based on alert information.

After mounting a hard disk, a status color changes frequently:

→ When creating a new mirror, the status of the hard disk and its upper component, SCSI enclosure, will continue to change frequently after you mount a hard disk until the mirror is completed. During this process, the status color may turn to abnormal, but when the mirror is created successfully, it will return normal.

Diagnostic of the CPU modules:

→ While diagnosing a stopped CPU module, the CPU is no longer in the duplex mode and the CPU and the memory cannot be used. However, the status of [CPU] and [DIMM] displayed under [CPU module] in the FTServer tree on a Data Viewer becomes “Online” and the status color becomes green.

New settings in thresholds of monitoring interval and free space monitoring are not reflected:

→ New settings in thresholds of monitoring interval and free space monitoring are not reflected immediately after they are changed. They are reflected at the next monitoring interval of monitoring service.

Fault time of a SCSI slot is not displayed correctly:

→ In the NEC Express5800/ft series with ft control software 3.0, “Time of last fault” in [Maintenance] under [SCSI slot] on a Data Viewer is not supported. Therefore the time will not be displayed correctly.

The mirroring status of a hard disk drive mirrored by the Rapid Disk Resync function is not displayed correctly:

→ The Data Viewer’s [Mirror Disk] tree of [FTSever] shows a pair of hard disk drives constructing mirroring as one mirror.

Therefore the status of a volume (such as span volume and striping volume) over

multiple hard disk drives created by the RDR function may not be displayed correctly. Use the RDR Utility for checking the state of mirrored hard disk drives created by the RDR function.

COLLECTION OF TROUBLE LOGS

In the event of trouble, you can get information in the procedures described below:

IMPORTANT:

- You can perform the procedures described below only when you are asked by your maintenance personnel to get trouble logs.
- When the system restarts after the trouble, it may show a message that there is a shortage of virtual memory. However, continue the system startup. If you reset and restart the system, you cannot get correct information.

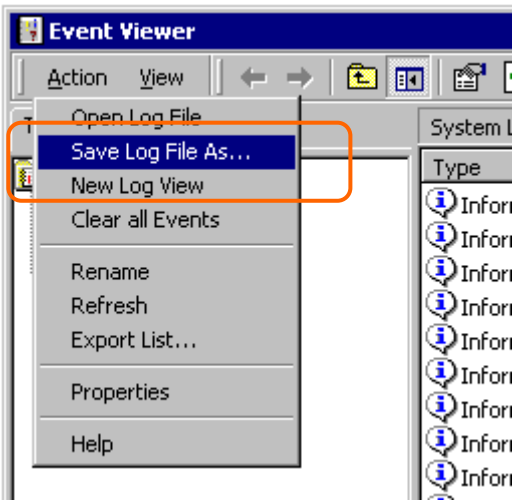
Collection of Event Logs

Collect the logs of various events that have occurred in the NEC Express5800/ft series.

IMPORTANT: If a STOP error or system error has occurred or the system has stalled, restart the system, and then start collecting event logs.

1. Click [Start] → [Settings] → [Control Panel] → [Administrative Tools] → [Event Viewer].
2. Select the type of the log to be collected.

   [Application Log] contains events related to the applications that were active at occurrence of the events. [Security Log] contains security-related events. [System Log] contains events that occurred in system components of Windows Server 2003, Enterprise Edition.
3. Click [Save Log File As...] in the [Action] menu.



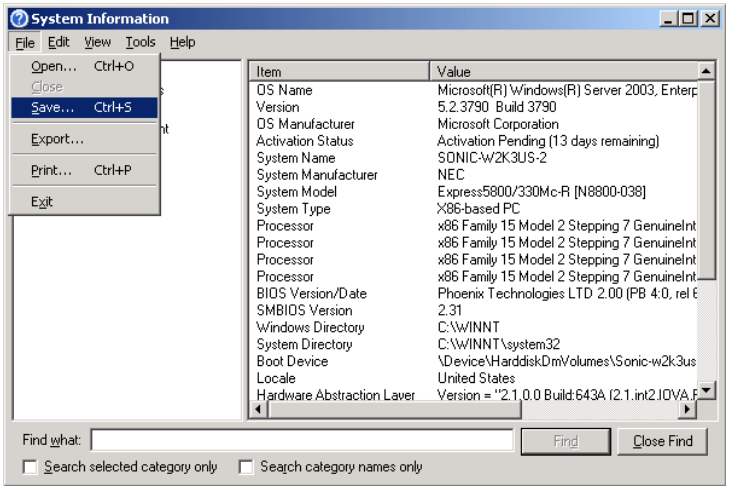
4. Enter the name of the target archive log file in the [File name] box.
5. Select the format of the target log file from the [Save as type] list box, and click [OK].

Collection of Configuration Information

Collect information such as the hardware configuration and internal setting information of the NEC Express5800/ft series.

IMPORTANT: If a STOP error or system error has occurred or the system has stalled, restart the system, and then start the work.

1. Click [Start] → [All Programs] → [Accessories] → [System Tools] → [System Information].
2. Select the [Save…] from the File menu.



3. Enter the name of the target file in the [File name] box.
4. Click [Save].

Collection of Diagnostic Information by Dr. Watson

Collect diagnostic information related to application errors by using Dr. Watson.

You can designate any destination to save diagnostic information.

For details, see help information. Click [Start] → [Run...], execute "drwtsn32.exe," and click [Help] in the [Dr. Watson for Windows] dialog box.

COLLECTION OF THE MEMORY DUMP

If a failure occurs, the memory data should be dumped to acquire the required information. If you stored the dump data in a DAT, label it so as to indicate the software (e.g. NTBackup) you used for storing it. You may save the diagnosis data to a desired destination.

IMPORTANT:

- Consult with your sales agent before dumping the memory. Executing memory dumping while the server is in the normal operation may affect the system operation.
- Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system again may result in dumping improper data.

Preparing for Memory Dump

Memory dumping with the DUMP switch may disable the server to restart. In such a case, it is required to force the server to shut down. This forced shutdown, however, is not available if "Masked" is selected for "Power Switch Mask" on the Security menu of the BIOS setup utility, SETUP, because this setting disables POWER switch operation.

Follow the procedure below to change the setting to enable the forced shutdown and restart of the server.

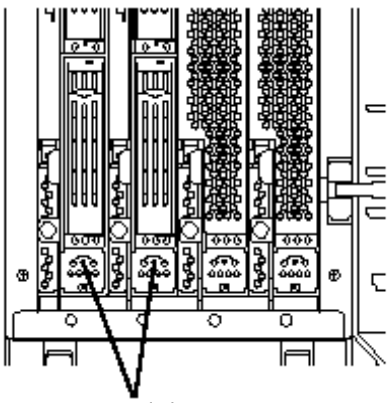
1. Power on the server and start the BIOS setup utility, SETUP.
2. Select "Unmasked" for "Power Switch Mask" in the Security menu.
3. Save the configuration data and exit the SETUP.

Saving Dump Files

Press the DUMP switch to save the dump file when an err occurs. Insert a metal pin (a straightened large paper clip v make a substitute) into the switch hole to press the DUMP switch.

Pressing the DUMP switch saves the dump file in the specified directory. (Memory dumping may not be availab when the CPU stalls.)

IMPORTANT: Do not use a toothpick or plastic stick that is easy to break.



Dump switches

Chapter 8

System Upgrade

This chapter describes procedures to add options and replace failed components.

IMPORTANT:

- Optional devices described in this chapter may be installed or removed by the user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. NEC recommends you ask your sales agent to install or remove any optional devices.
- Be sure to use only optional devices and cables designated by NEC. Repair of the server due to malfunctions, failures, or damage resulted from installing such devices or cables will be charged.

SAFETY PRECAUTIONS

Observe the following notes to install or remove optional devices safely and properly.

⚠ WARNING

Observe the following instructions to use the server safely. There are risks of death or serious personal injury. See PRECAUTIONS FOR SAFETY in Chapter 1 for details.

- Do not disassemble, repair, or alter the server.
- Do not look into the CD-ROM drive.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION

Observe the following instructions to use the server safely. There are risks of fire, personal injury, or property damage. See PRECAUTIONS FOR SAFETY in Chapter 1 for details.

- Do not install or remove components by a single person.
- Do not install the server leaving the cover removed.
- Make sure to complete component installation.
- Do not pinch your finger(s).
- High temperature

ANTI-STATIC MEASURES

The server contains electronic components sensitive to static electricity. Avoid failures caused by static electricity when installing or removing any optional devices.

- Wear wrist straps (arm belts or anti-static gloves).

  Wear wrist straps on your wrists. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

  Touch the metal part regularly when working with components to discharge static electricity.

- Select a suitable workspace.
  - Work with the server on the anti-static or concrete floor.
  - When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.
- Use a worktable.

  Place the server on an anti-static mat to work with it.

- Clothes
  - Do not wear a wool or synthetic cloth to work with the server.
  - Wear anti-static shoes to work with the server.
  - Take off any metal accessories you wear (ring, bracelet, or wristwatch) before working with the server.
- Handling of components
  - Keep any component in an anti-static bag until you actually install it to the server.
  - Hold a component by its edge to avoid touching any terminals or parts.
  - To store or carry any component, place it in an anti-static bag.

PREPARING YOUR SYSTEM FOR UPGRADE

Note the following, when installing or replacing devices, to improve the performance of NEC Express5800/ft series.

- With the NEC Express5800/ft series, devices can be replaced during the continuous operation. Take extreme care for electric shock and damage to the component due to short-circuit.
- Optional devices cannot be installed or removed during continuous operation. Normally, shutdown Windows Server 2003, Enterprise Edition, check that the server is powered off, disconnect all power cords and interface cables from the server before installing or removing the optional devices.
- To remove the CPU or PCI module during the continuous operation, disable the intended module (place the module off-line) by using the ft server utility of the NEC ESMPRO Agent or the NEC ESMPRO Manager from the management PC on the network. After a new module is installed to the server, enable the module using the ft server utility or the NEC ESMPRO Manager.

  TIPS: The system is defaulted to automatically boot the module, once installed. For more information, see Chapter 5.

- Make sure to provide the same hardware configuration on both groups.
- Use the same slots and sockets on both groups.
- Do not install those devices having different specifications, performance, or features.
- Before removing the setscrews from the CPU and PCI modules, place the desired module off-line using the ft server utility or the NEC ESMPRO Manager.

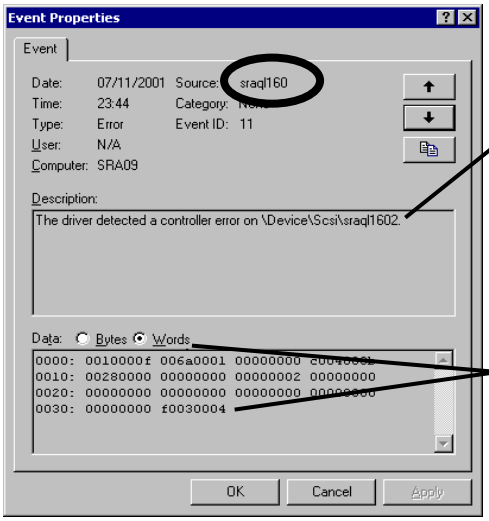
3.5-INCH HARD DISK DRIVE

The 3.5-inch hard disk drive bay in front of the server contains six slots in which hard disks with the SCA2 interface are installed.

The figures used in this section show the rack-mount model. The orientation is the only difference from the tower model.

IMPORTANT:

- Do not use any hard disks that are not authorized by NEC. Installing a third-party hard disk may cause a failure of the server as well as the hard disk. Purchase hard disks of the same model in pair. Contact your sales agent for hard disk drives optimum for your server.
- The OS starts from the hard disk that is mounted in Slot 1 of the primary module (whose POWER LED is on).
  A SCSI controller error having sraql160 as its source may sometimes be recorded in the system event log. This error is likely to be issued when the hard disk drive processing cannot keep up in time with requests of the OS, but the processing is carried on normally thanks to the retry function. So, this does not affect the operation at all. In case such an error is issued, check the detailed data indicated below, and if it is "f0030004" or "f0030015," just ignore that log.
  If, however, a SCSI controller error whose detailed data is "f0030004" or "f0030015" is recorded repeatedly (ten times or more in a week time as a rough guide), a hard disk drive failure is suspected. Contact the maintenance personnel in such a case.



Description:
The driver detected a controller error on \Device\Scsi\sraql160x [x is a numeral as 1 or 2 for example.]

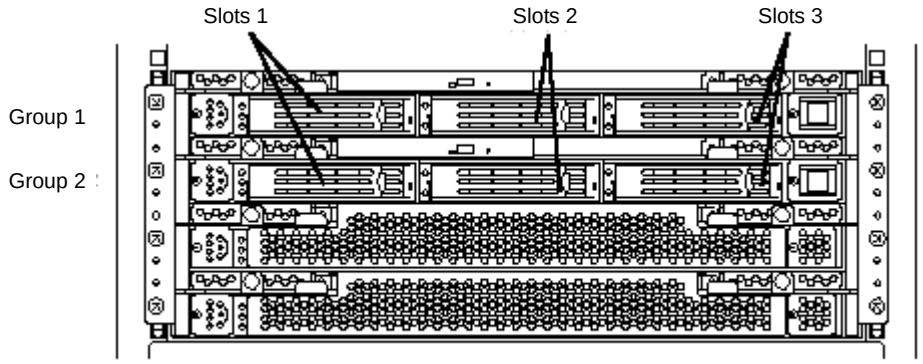
In the case where the detailed data of the above event properties is represented in words, the error represents no trouble if the value from 0034: is “f0030004” or “f0030015”.

TIPS:

- POWER LED is on to indicate that it is the primary module.
- The module that you plug in first will be the primary module (see Chapter 3).

You can install hard disks, each of which is about 25.4 mm (1 inch) in thickness, to the three slots of each module. Each slot has a label describing the slot number.

Disks of the same slot number are mirrored between the groups. The figure below shows the groups and mirroring slots.



Slots used in mirroring

Empty slots in the 3.5-inch hard disk drive bay contain dummy trays. The dummy trays are inserted to improve the cooling effect within the device. Always insert the dummy trays in the slots in which hard disks are not installed.

Attach an HDD ID label indicating the slot number of installed hard disk to the handle of the hard disk.

Installing 3.5-inch Hard Disk Drive

Follow the procedure below to install the hard disk. A hard disk may be installed in another slot in the same procedure.

IMPORTANT:

- Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.
- Install two hard disks for dual disk configuration before starting Windows Server 2003, Enterprise Edition. Make sure to configure the hard disks as dual disk.

1. Shutdown Windows Server 2003, Enterprise Edition.

The system turns off automatically.

2. Disconnect all the power cords from the power outlet.

3. <Tower model>

Unlock the front bezel with the security key and open it.

<Rack-mount model >

Unlock the front bezel with the security key and remove the upper and lower panels.

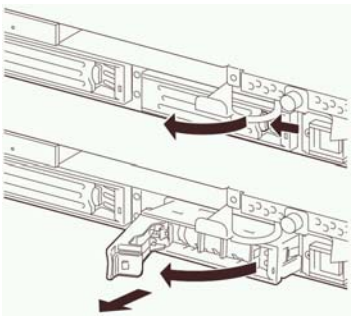
4. Identify the slot to which you want to install the hard disk.

Install a hard disk in an empty slot in the group, starting from the left slot.

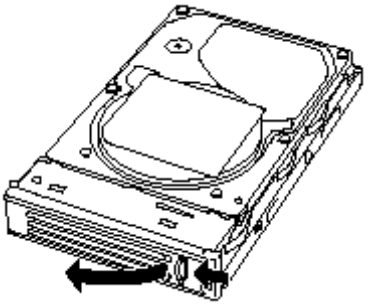
5. Unlock the lever of the dummy trays and remove the trays by pulling the handles (handles need to be brought forward to be pulled).

All the slots except Slot 1 have a dummy tray.

IMPORTANT: Carefully keep the removed dummy tray.



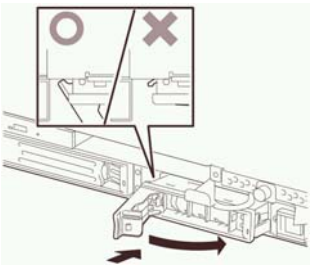
6. Unlock the hard disk to be added.



7. Firmly hold the handle of the hard disk to install and insert the hard disk into the slot.

TIPS:

- Engage the upper and lower frames of the tray with the left and right grooves on the 3.5-inch hard disk drive bay and insert the hard disk.
- Insert the disk until the lever hook touches the server frame.
- Check the orientation of lever. Insert the hard disk with the lever unlocked.



8. Slowly close the lever.

When the lever is locked, you will hear a click sound.

IMPORTANT: Be careful not to pinch your finger(s) between the lever and handle.

TIPS: Check the hook of the lever is engaged with the frame.

9. Connect all the power cords.

10. Press the POWER switch to turn on the system power.

11. <Tower model>

Close the front bezel and lock it with the security key.

<Rack-mount model>

Install the upper and lower panels and lock the front bezel with the security key.

A while after Windows Server 2003, Enterprise Edition is started, [New Hardware Detection] wizard is displayed.

12. Select [Make known drivers for this device displayed and select a driver from the list] and click [Next].

13. Check that "Stratus Dual Initiated disk Device" is displayed in the list, and click [Next] repeatedly until [Finish] is displayed.

14. Set the dual disk configuration (see Chapter 3).

Removing 3.5-inch Hard Disk Drive

Follow the procedure below to remove the hard disk.

IMPORTANT: Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.

1. Shutdown Windows Server 2003, Enterprise Edition.

   The system turns off automatically.

2. Disconnect all the power cords from the power outlet.

3. <Tower model>

   Unlock the front bezel with the security key and open it.

   <Rack-mount model>

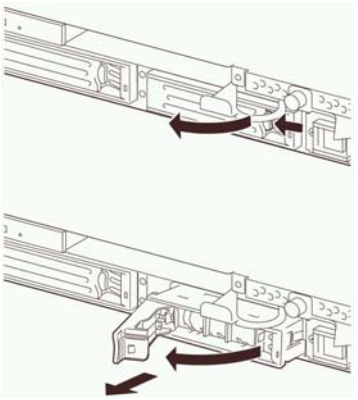
   Unlock the front bezel with the security key and remove the upper and lower panels.

4. Push the lever of the hard disk to unlock the handle.

5. Hold the handle and hard disk to pull them off.

6. Install the dummy tray in an empty tray according to procedures described in "Installation".

   Make sure to install the dummy tray in the empty slot to improve the cooling effect within the device.



Replacing 3.5-inch Hard Disk Drive

Follow the procedure below to remove the failed hard disk. If the hard disk fails, it should be replaced with new device with the server powered-on.

IMPORTANT: Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options. You can replace disks during continuous operation.

Replacing the Hard Disk Drive

1. Locate the failed hard disk.

   When a hard disk fails, the DISK LED on the hard disk drive's handle illuminates green, while the other mirrored disk illuminates amber.

   The DISK Power/Access LED of the amber lit disk also illuminates amber.

   TIPS: Even if a hard disk fails, the DISK LEDs may not illuminate as described above. See "How to Locate Failed Disks" in Chapter 3 to identify failed disks.

2. Referencing the steps in "Removing the hard disk", remove the failed hard disk.

   No need to shutdown Windows Server 2003, Enterprise Edition.

3. Refer to the steps in "Installing the hard disk" to install a new hard disk.

   TIPS:

   - The hard disk to be installed for replacement must have the same specifications as its mirroring hard disk.
   - Use an unsigned hard disk to replace the failed one. If you use a signed disk, you need to restore the redundant configuration in the procedure of "How to Restore Redundant Configuration Manually" below.

4. The system will automatically restore its redundant configuration.

   Since the redundant configuration is restored automatically, you do not need to use VERITAS Volume Manager to restore it.

   IMPORTANT:
   The redundant configuration is not restored automatically in the following cases:

   - If you use a signed hard disk.
   - If you replace a disk that is connected to a fibre channel.
   - If you replace a disk that has partitions or volumes.
   - If you replace a disk while the system is shut down.

CPU MODULE

Concerning the CPU module, you can add or replace the following components, or CRU (customer-replaceable units):

- CPU (processor)
- DIMM (memory)

Remove the CPU module to install or remove these devices. The figures used in this section show the rack-mount model. The orientation is the only difference from the tower model.

IMPORTANT:

- Ask your sales agent to replace the CPU module and components of the CPU module.
- Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before installing or removing options.
- To install or remove CPU or DIMM, first power off the server before removing the CPU module. The procedures described below are for replacement of DIMMs.
- Removing the module being operating may cause unexpected trouble. Use the management software (e.g., ft server utility or NEC ESMPRO Manager) to identify the module to be removed so that the module is removed when it is stopped, without fail
  Then remove the relevant module after verifying the status LED on the CPU module. For information on the status LEDs, see “LEDs” in Chapter 2.
- Handle the module fixing screw with your hand, not by using any tool.
- If you have replaced the module, attach an HDD ID label indicating the replaced module number to the upper part of the fixing screw of the module.
- When replacing a PCI module and a CPU module, replace one module and wait until dual configuration is established to replace the other module. If you replace the both modules simultaneously, dual configuration of either CPU modules or PCI modules may fail. (See Chapter 7 “Troubleshooting.”)

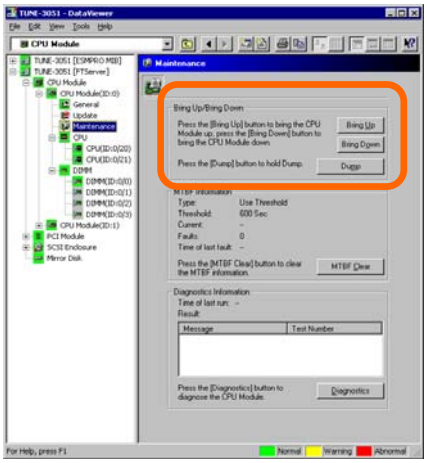
Removing CPU Module

Follow the procedure below to remove the CPU module.

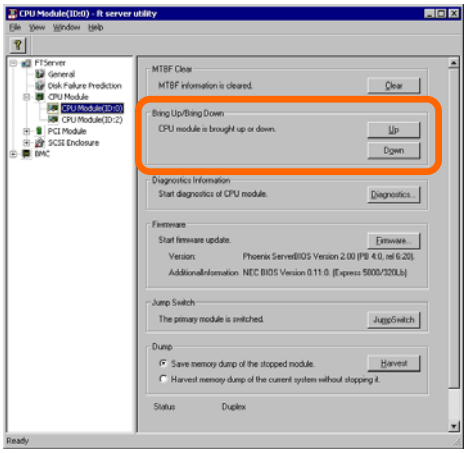
1. Stop the CPU module you want to remove.

To this end, use the ft server utility of the NEC ESMPRO Agent installed to your server or the Data Viewer of the NEC ESMPRO Manager.

For the detailed procedure, see "NEC ESMPRO Agent and Manager" - "Maintenance of NEC Express5800/ft series" in Chapter 5.



NEC ESMPRO Manager
Select [FTServer] → [CPU Module] → [CPU Module (to be removed)] → [Maintenance] → [Bring Up/Bring Down] → [Bring Down].



ft server utility
Select [FTServer] → [CPU Module] → [CPU Module (to be removed)] → [Bring Up/Bring Down] → [Down].

After the CPU module enters into off-line status, the status LED will change as follows.

Fail LED: Red

State LED: Off

2. <Tower model>

Unlock the front bezel with the security key and open it.

<Rack-mount model>

Unlock the front bezel with the security key and remove the upper and lower panels.

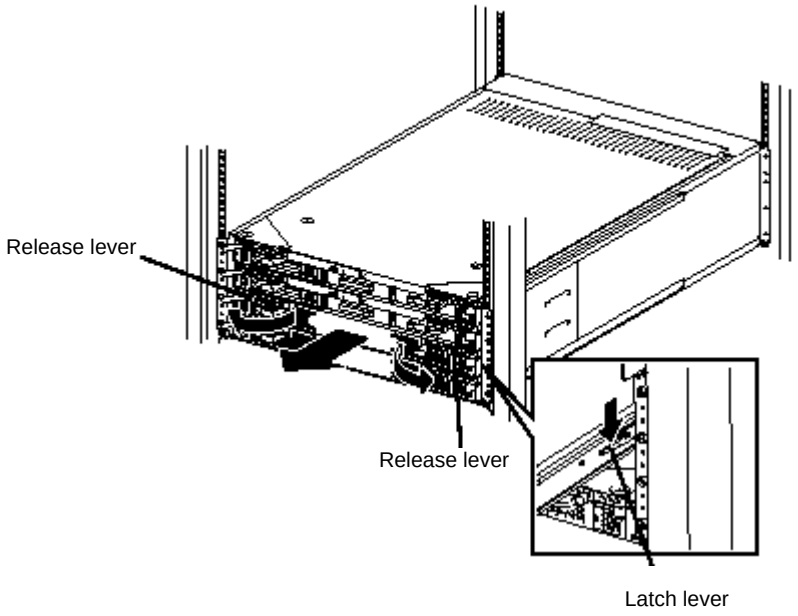
3. Loosen the setscrews that secured the CPU module's release lever.

4. Hold the release lever of the CPU module and pull it off.

The CPU module is slightly pulled out toward you.

5. Pull off the module halfway slowly. Pushing down the latch lever on the side to unlock it, pull the module off the rack.

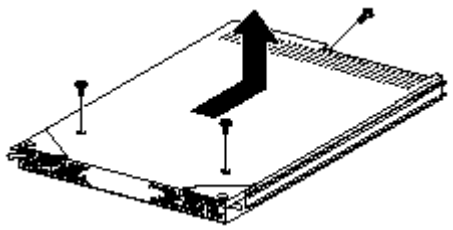
IMPORTANT: Carefully handle the CPU module so that you will not drop it or strike it against other server internal devices.



6. Carefully place the CPU module on the flat and sturdy table.

Avoid the dusty or humid place.

7. Remove the two setscrews on the front of the CPU module and one setscrew on the back.



8. Slide the top cover a little to remove it.

This allows you to access the devices in the CPU module. For more information on how to handle these devices, see the associated sections.

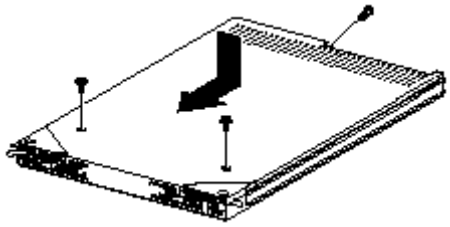
Installing CPU Module

Follow the procedure below to install the CPU module:

IMPORTANT: Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.

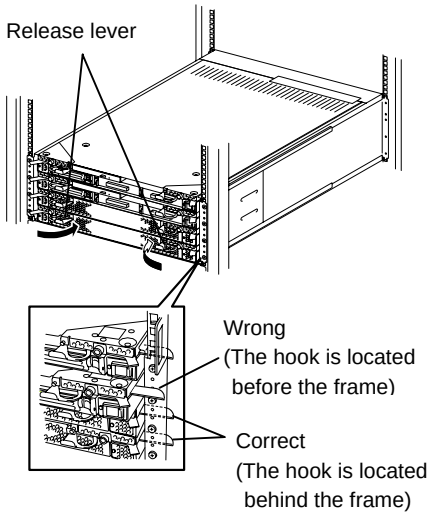
1. Install the top cover to the CPU module.

   TIPS: Check the left, right, and upper tabs on the top cover are certainly engaged with the CPU module.



2. Secure the top cover to the CPU module with the three setscrews.
3. Firmly hold the CPU module with both hands and insert it into the server.

   Hold the module in such a way that its back panel connector faces the back of the rack and engage the guides of the module and chassis to insert it slowly.



4. Hold the release lever to push the module as far as it goes.

5. Close the release lever.

The installed CPU module will start automatically.

IMPORTANT: Unless the release levers are located inside the rack frame, the module won't be mounted correctly.

6. Screw the release levers.

DIMM

The DIMM (dual inline memory module) is installed to the DIMM socket in the CPU module on the NEC Express5800/ft series.

The CPU module board is equipped with six sockets. Two standard 256MB DIMMs are mounted in DIMM#1 and #2 each. (The standard DIMM can be replaced with another DIMM.)

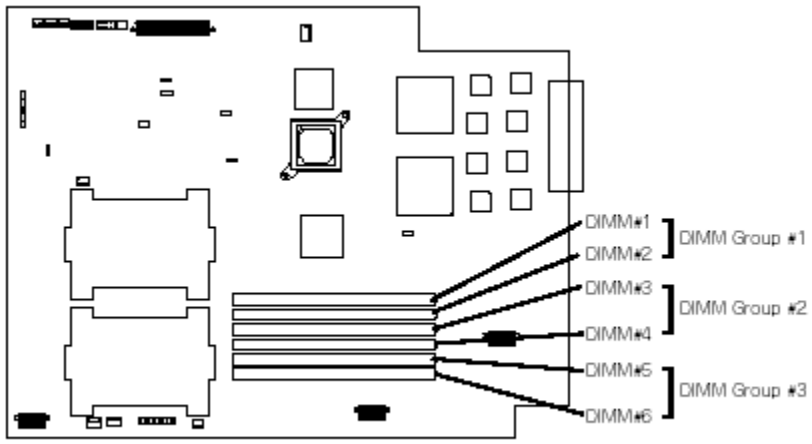
DIMMs should be installed to these sockets, starting from the lowest socket number.

TIPS:

- The memory capacity can be increased up to 6 GB (six 1GB DIMMs).
- In the error messages and logs in POST, NEC ESMPRO, or Off-line Maintenance Utility, the DIMM connector may be described as “group”. The number next to “group” corresponds to the connector numbers shown in the figure below.

IMPORTANT:

- The DIMM is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM. Do not touch the DIMM terminals or on-board parts with a bare hand or place the DIMM directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Make sure to use the DIMM authorized by NEC. Installing a third-party DIMM may cause a failure of the DIMM as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.
- Before adding or removing DIMMs, power off the server and detach the CPU module.
- Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before installing or removing options.



CPU module board

Note the following to install or replace DIMM.

- The DIMMs with the same number are linked among the groups. When a DIMM is added to one group, another identical DIMM should be installed to the socket with the same number in another group. This rule is applied to the case of removal.
- The linked DIMMs should be of the same product with same performance.
- DIMMs should be installed in sockets, starting from the lowest socket number.

Installing DIMM

Follow the procedure below to install the DIMM. Make sure to power off the server before starting installation except when replacing DIMM.

1. Shutdown OS.

   The system turns off automatically.

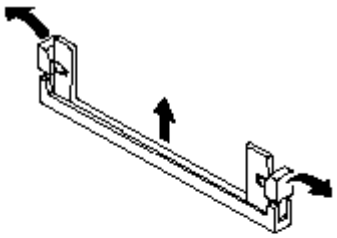
2. Disconnect power cord from outlet.

3. Remove the CPU module.

4. Check to be sure in which socket you are mounting the DIMM.

5. Remove the connector cover from the socket.

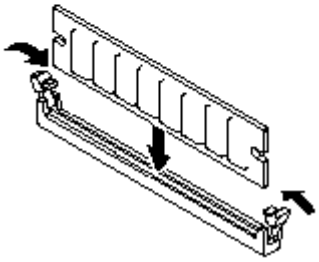
   A DIMM connector cover is installed to the open socket. When the levers on both ends of the connector are opened, the DIMM connector cover is unlocked and you can remove the cover.

   IMPORTANT: Carefully keep the removed DIMM connector cover.

6. Insert a DIMM into the DIMM socket straight.

   TIPS: Pay attention to the orientation of the DIMM. The terminal of the DIMM has a cutout to prevent misinsertion.

   After the DIMM is completely inserted into the socket, the levers are automatically closed.

7. Mount the CPU module.

8. Connect the power cords.

9. Press POWER switch to power on the module.

10. Verify that POST displays no error messages.

    If POST displays an error message, take a note on the massage and see the POST error messages listed in Chapter 7.

11. After starting the OS, set the paging file size to at least the recommended value (1.5 times the installed memory size).

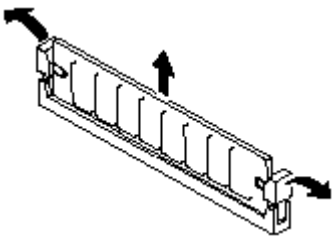
Removing DIMM

Follow the procedure below to remove the DIMM. Make sure to power off the server before installation except when replacing DIMM.

TIPS: Unless at least two DIMMs are installed, the server does not work.

1. Shutdown OS.

   The system turns off automatically.
2. Disconnect power cord from outlet.
3. Remove the CPU module.
4. Open the levers on the target DIMM socket. The DIMM is unlocked and you can remove the device.
5. Mount the CPU module.



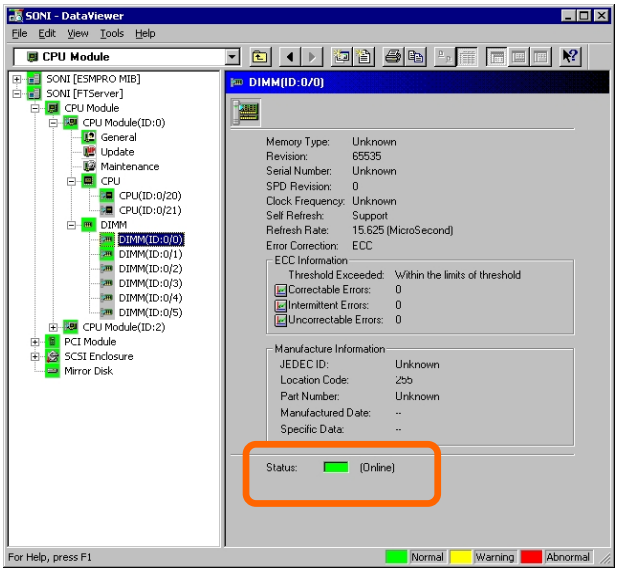
6. Connect the power cord.
7. Press the POWER switch to power on the module.
8. Verify that POST displays no error messages.

   If POST displays an error message, take a note on the massage and see the POST error messages listed in Chapter 7.

Replacing DIMM

Follow the procedure below to replace the failed DIMM.

1. Identify the failed DIMM using the Data Viewer of the NEC ESMPRO Manager.



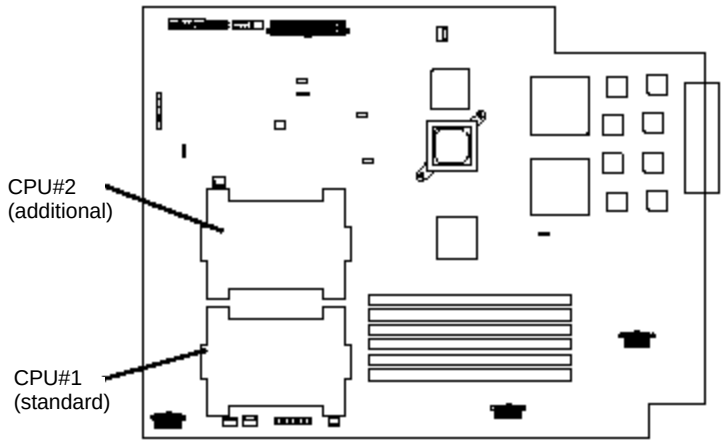
2. Remove the CPU module.
3. Replace a DIMM
4. Install the CPU module.
5. Boot the CPU module using the NEC ESMPRO Manager or ft server utility.

PROCESSOR (CPU)

In addition to the standard CPU (Intel® Xeon™ Processor), you can add one CPU to make a multi-processor system.

IMPORTANT:

- The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU terminals or on-board parts with a bare hand or place the CPU directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Do not use the system before checking to see it works correctly.
- Make sure to use the CPU authorized by NEC. Installing a third-party CPU may cause a failure of the CPU as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.
- Before adding or removing CPU, power off the server and detach the CPU module.
- Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.

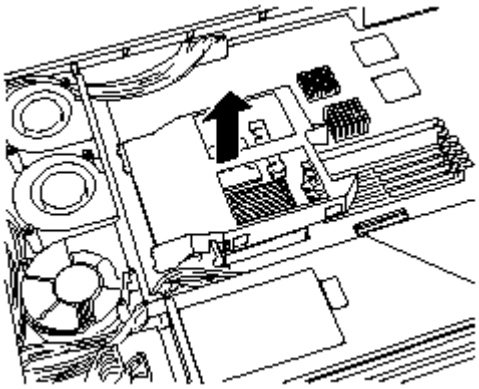


Installation

Follow the steps below to mount a CPU:

1. Shut down OS.

   The server will be powered off automatically.
2. Unplug the power cord.
3. Remove the CPU module.
4. Detach the CPU air duct.

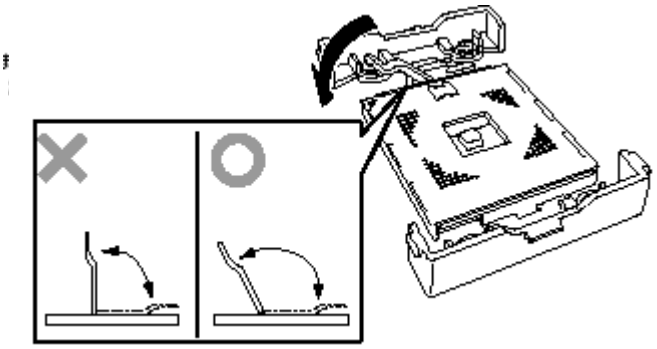


5. Check to be sure of the location of the CPU socket.
6. Remove the anti-dust sheet from the socket.

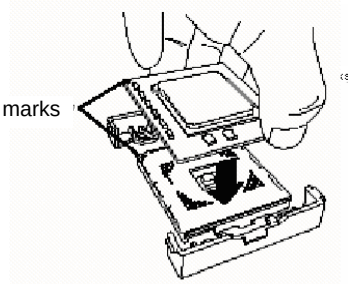
IMPORTANT: Carefully keep the removed sheet.

7. Lift the socket lever.

IMPORTANT: Open the lever fully. It can be opened 120° or more.

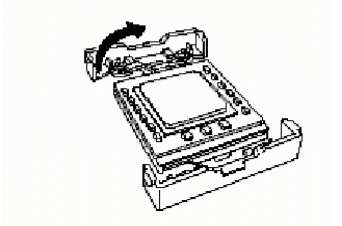


8. Place the CPU carefully on the socket.



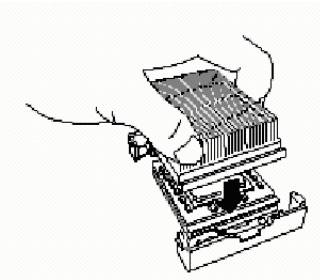
> **TIPS:** Pay attention to the orientation of the CPU.
>
> The CPU and socket have pin marks to prevent misinsertion.

9. After pressing the CPU softly against the socket, close the levers to fasten it.



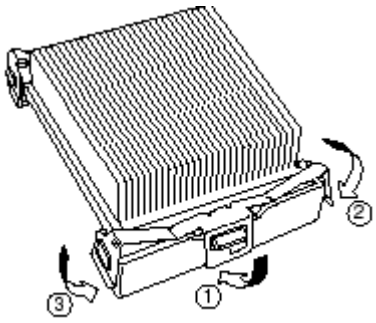
10. Remove the film of the cool sheet that is affixed on the heat sink.

11. Place the heat sink on top of the CPU.



12. Fasten the heat sink with its clip.

Engage the clip holes with tabs on the sides of the retention: engage one hole first and engage the other holding the first hole.



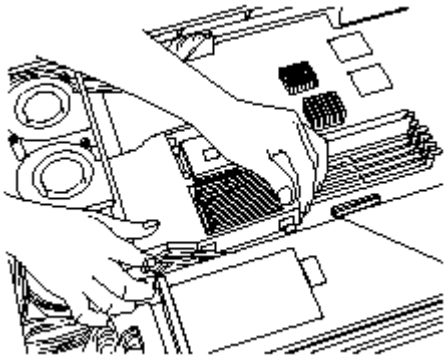
13. Check to see if the heat sink is mounted parallel with the motherboard.

IMPORTANT:

- If the heat sink is not parallel to the motherboard, dismount and remount it. You cannot mount the heat sink correctly due to the following:
  - CPU is not mounted correctly
  - The heat sink clip is not engaged correctly.
- Do not hold the fastened heat sink to move the CPU.

14. Attach the CPU air duct.

TIPS: Check to see if the air duct is attached securely with its projected parts inserted into the chassis.



15. Install the CPU module.

16. Connect the power cord.

17. Press the POWER switch to power on the module.

18. Verify that POST displays no error messages.

If POST displays an error message, take a note on the massage and see the POST error messages listed in Chapter 7.

Removing CPU

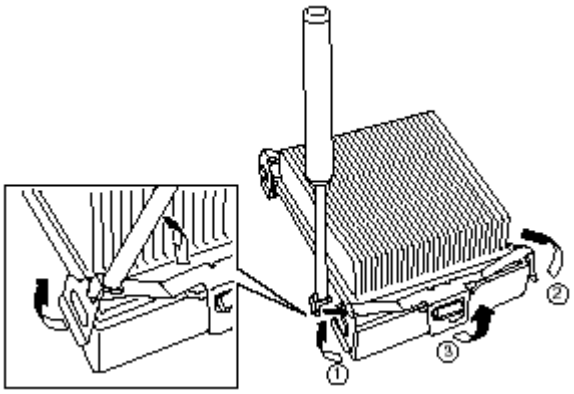
Follow the steps below to remove the CPU. Except when you replace the CPU with a new one, power off the server.

IMPORTANT:

- Do not remove the CPU unless it is faulty.
- If a CPU is not mounted on CPU#2, cover it with an anti-dust sheet.
- After operation, the cool sheet at the bottom of the heat sink may stick to the CPU because of heat. When you dismount the heat sink, turn it lightly to make sure that the heat sink is not sticking to the CPU. Otherwise, the CPU or socket may be damaged.

1. Shut down OS.

   The server will be powered off automatically.
2. Unplug the power cord.
3. Remove the CPU module.
4. Detach the CPU air duct.
5. Dismount the heat sink using the dismount tool included with the additional CPU.



6. Remove the CPU.

7. Affix an anti-dust sheet on the CPU socket.

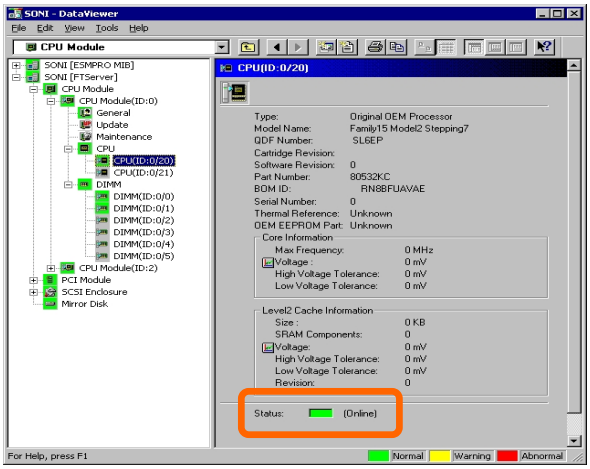
   Place the adhesive part on the opposite side of the lever. Any part of the sheet place off the socket.
8. Install the CPU module.
9. Connect the power cord.
10. Press the POWER switch to power on the module.

11. Verify that POST displays no error messages.

If POST displays an error message, take a note on the massage and see the POST error messages listed in Chapter 7.

Replacing CPU

Follow the steps below to replace a failed CPU:



1. Use Data Viewer of NEC ESMPRO Manager to check the failed CPU.

2. Remove the CPU module.

3. Replace the CPU.

4. Install the CPU module.

The installed CPU module will start automatically.

PCI MODULE

Three PCI boards can be installed to the PCI module.

Up to two PCI boards can be added to each PCI module, therefore, the server can accommodate four additional PCI boards at a maximum (one video board has already been installed to each PCI module in standard configuration).

Remove the PCI module when adding or replacing the PCI board. The figures used in this section show the rack-mount model. The orientation is the only difference from the tower model.

IMPORTANT:

- Ask your sales agent to replace the PCI module and its components.
- Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.
- Handle the module fixing screw with your hand, not by using any tool.
- If you have replaced the module, attach an HDD ID label indicating the module number to the upper part of the screw fixing the module.

TIPS: The primary PCI module is the one whose POWER LED is on.

Precautions

- If you remove a PCI module during operation, dual configuration of its internal hard disks will be cancelled. If you mount the module again, the dual configuration will be restored automatically. However, do not perform a system shutdown or remove any of the PCI modules before the dual configuration is completed. Otherwise, hard disk data could be corrupted.
- Removing the primary (active) module will cause unexpected trouble. Be sure to remove the secondary (inactive) module.
- When the secondary BMC is not in synchronous condition, removing the PCI module on the primary BMC will lose the SG data (system data). If one of the STATUS LEDs is blinking in red, do not remove the PCI module associated with another STATUS LED.

  When DC power is off:

BMC#1	BMC#2	Status
Off (Primary)	Blinking in red (Secondary) (At 1-second intervals)	Do not remove the PCI module on Primary BMC side. BMC Sync disabled.
Off (Primary)	Lit in red (Secondary)	Do not remove either of the PCI modules. During BMC Sync.
Off (Primary)	Blinking in red (Secondary) (At 0.5-second intervals)	Do not remove either of the PCI modules or control the AC/DC power before the LED stops blinking.

  When DC power is on:

BMC#1	BMC#2	Status
Lit in green (Primary)	Blinking in red (Secondary) (At 1-second intervals)	Do not remove the PCI module on Primary BMC side. BMC Sync disabled.
Lit in green (Primary)	Lit in red (Secondary)	Do not remove either of the PCI modules. During BMC Sync.
Lit in green (Primary)	Blinking in red (Secondary) (At 0.5-second intervals)	Do not remove either of the PCI modules or control the AC/DC power before the LED stops blinking.

- When you remove a PCI module, the system will be powered off automatically. If there is a CD-ROM in the drive, eject it before removing the module.
- When you insert a PCI module while the system is off, make sure that the newly inserted PCI module's BMC status LED is off and then press the power switch.
- When replacing a PCI module and a CPU module, replace one module and wait until dual configuration is established to replace the other module. If you replace the both modules simultaneously, dual configuration of either CPU modules or PCI modules may fail. (See Chapter 7 "Troubleshooting".)
- To add a backup module, stop the PCI module to connect and then connect the SCSI cable.

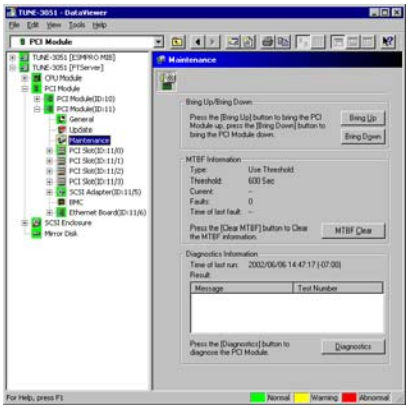
Removing PCI Module

Follow the procedure below to remove the PCI module.

1. Stop the PCI module you want to remove.

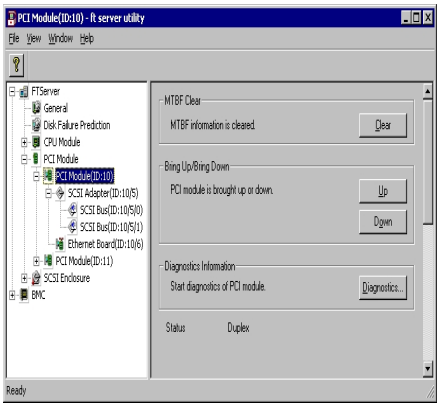
To this end, use the ft server utility of the NEC ESMPRO Agent installed to your server or the Data Viewer of the NEC ESMPRO Manager.

For more information, see "NEC ESMPRO Agent and Manager" - "Maintenance of NEC Express5800/ft series" in Chapter 5.



NEC ESMPRO Manager

Select [FTServer] → [PCI Module] → [PCI Module (to be removed)] → [Maintenance] → [Bring Up/Bring Down] → [Bring Down].



ft server utility

Select [FTServer] → [PCI Module] → [PCI Module (to be removed)] → [Bring Up/Bring Down] → [Down].

After the CPU enters into off-line status, the status LEDs of the PCI board and PCI module will change as follows.

PCI board slot status LEDs (all of them): Off

PCI module

Status LED 1: Red

Status LED 2: Off

2. <Tower model>

Unlock the front bezel with the security key and open it.

<Rack-mount model>

Unlock the front bezel with the security key and remove the upper and lower panels.

3. Disconnect the PCI module's network cable and cables connected to the options.

4. Loosen the setscrew securing the PCI module's release lever.

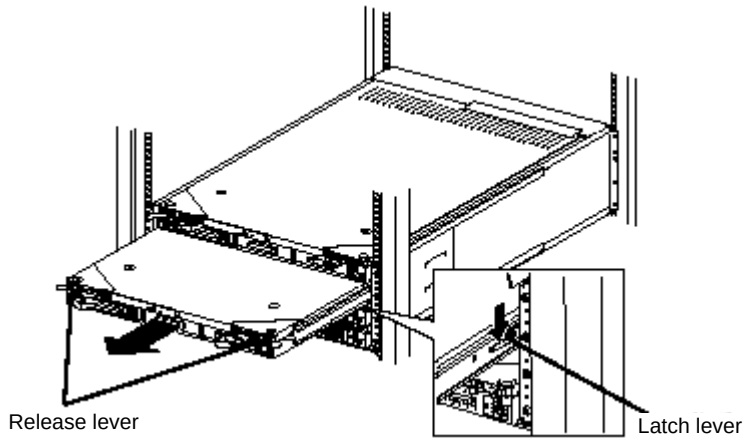
5. Hold the release lever of the PCI module and pull it off.

The PCI module is slightly pulled out toward you.

IMPORTANT: Do not hold the other parts than the release lever to pull the module.

6. Pull off the module halfway slowly. Pushing down the latch lever on the side to unlock it, pull the module off the rack.

IMPORTANT: Carefully handle the PCI module so that you will not drop it or strike it against other server internal devices.



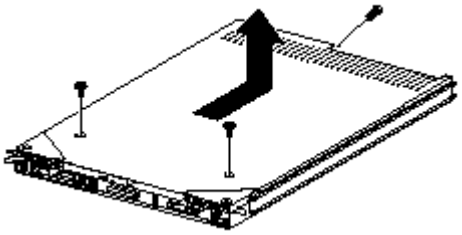
7. Carefully place the PCI module on the flat and sturdy table.

Avoid the dusty or humid place.

8. Remove the two setscrews on the front of the PCI module and one setscrew on the back.

9. Slide the top cover a little to remove it.

This allows you to access the devices in the PCI module. For more information on how to handle these devices, see the associated sections.



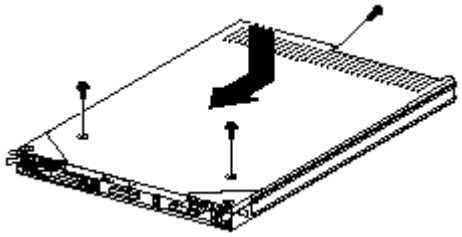
Installing PCI Module

Follow the procedure below to install the PCI module:

IMPORTANT: Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.

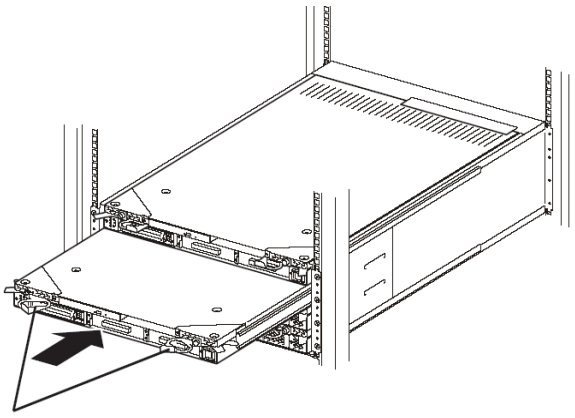
1. Install the top cover to the PCI module.

   TIPS: Check the left, right, and upper tabs on the top cover are certainly engaged with the PCI module.



2. Secure the top cover to the PCI module with the three setscrews.
3. Firmly hold the PCI module with both hands and insert it into the server.
4. Hold the module in such a way that its back panel connector faces the back of the rack and engage the guides of the module and chassis to insert it slowly.
5. Hold the release lever to push the module as far as it goes.

   Do not close the release lever yet.

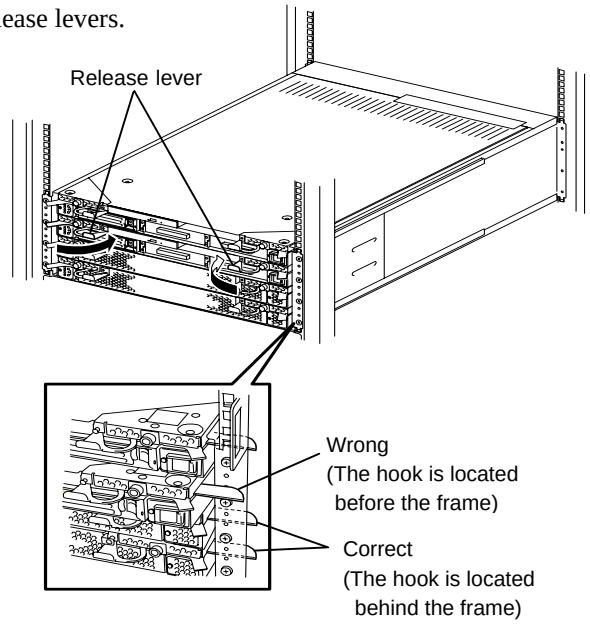


6. Connect the network cable and option cables.

7. Close the release lever.
The installed PCI module will start automatically.

> **IMPORTANT:** Unless the release levers are located inside the rack frame, the module won't be mounted correctly.

8. Screw the release levers.



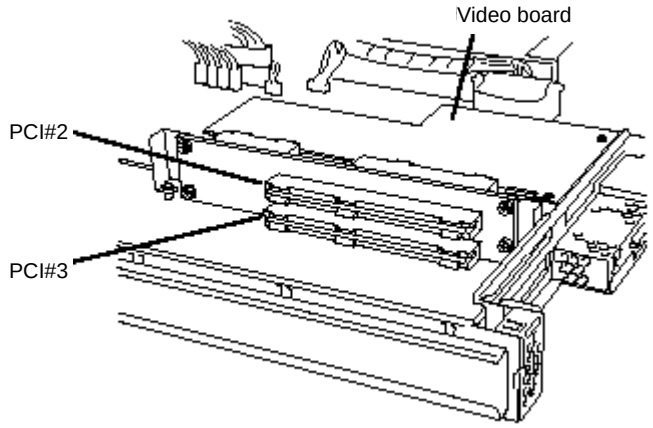
PCI BOARD

Up to three PCI boards can be installed to the PCI module (however, one video board is already installed in each module in standard configuration).

IMPORTANT:

- The PCI board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board. Do not touch the PCI board terminals or on-board parts by a bare hand or place the PCI board directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Make sure to read "Anti-static Measures" and "Preparing Your System for Upgrade" before starting installing or removing options.
- PCI#1 is a slot dedicated for video board, which is standard equipment. Do not replace this broad with any other board.

TIPS: When a PCI board is installed or removed, or the slot is changed, use the BIOS setup utility "SETUP" to change the detailed settings such as interrupt line (IRQ), when necessary. See Appendix B for details.



Built-in riser cards of PCI module

Note the following to install or replace PCI board.

- To add a PCI board, the system must be shut down.
- To make a dual PCI board configuration, install the same type of board (i.e., having the same specifications and performance) to the same slot in another group.

  When a PCI board is installed to one group, another identical PCI board should be installed to the same slot in another group. This rule is applied to the case of removal.
- Install the PCI boards, starting from the one with the smallest number.

Installing PCI Board

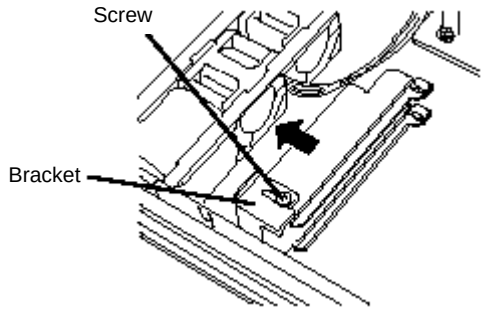
Follow the procedure below to install the board to be connected to the PCI board slot.

TIPS: To install the PCI board, make sure the shape of the board connector matches with the shape of the PCI board slot connector.

1. Remove the PCI module.
2. Remove the PCI module's top cover.
3. Identify the slot to which you want to install a PCI board and remove the connector cap.

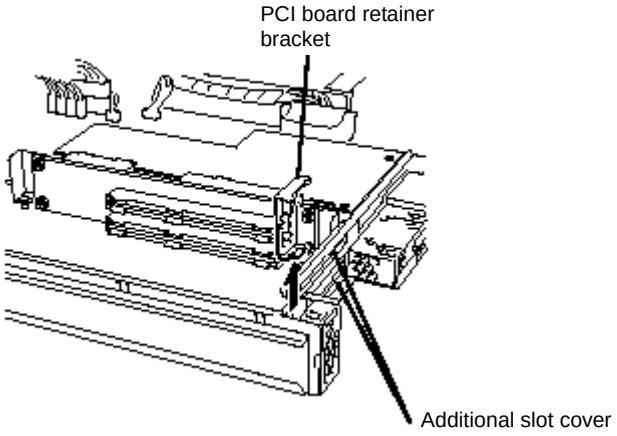
IMPORTANT: Carefully keep the removed connector cap.

4. To install a long card, loosen the setscrew, slide the bracket, and secure it with the setscrew.

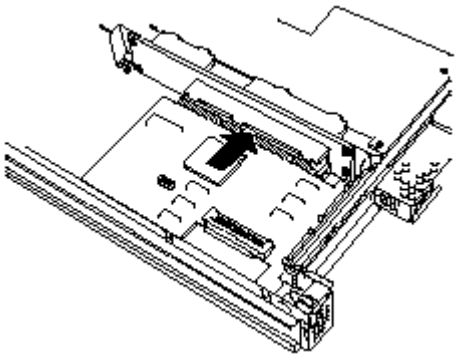


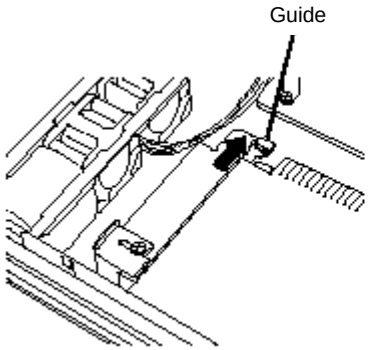
5. Pull the PCI board retainer bracket from the inside.
6. Unscrew the setscrew of the additional slot cover at the same position (level) as the target slot, and remove the slot cover.

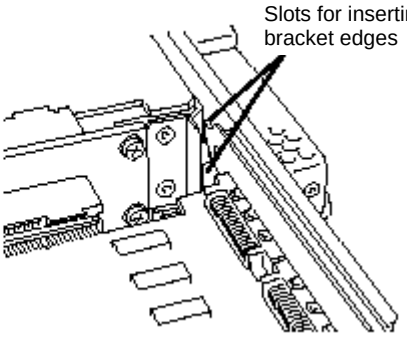
IMPORTANT: Carefully keep the removed additional slot cover.



7. Align the terminal segment of the board with the connection of the slot and insert the board slowly into the slot.

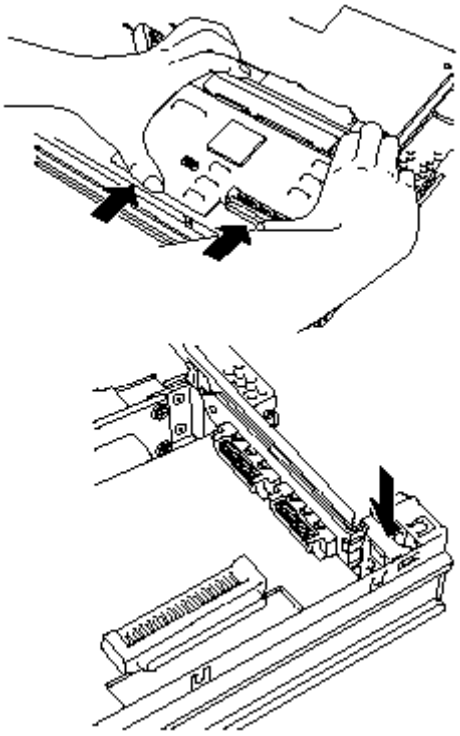






TIPS: Check to see if the edge of the bracket (taper) is inserted into a slot of the chassis. In the case of a long board, check also to see if its other edge is inserted into the bracket guide.

8. Align the PCI board with the guide rail groove and insert the board slowly.

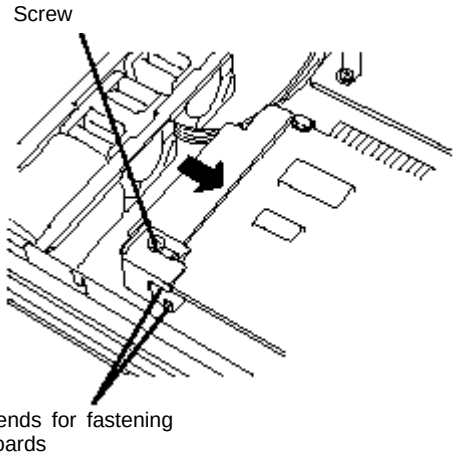


IMPORTANT:

- If the insertion is unsuccessful, remove the board once and retry installation. Note that if excessive force is applied to the board, it may be damaged.

9. Attach the retainer bracket to fasten the PCI board.

10. In the case of a long board, slide the bracket to fasten the other edge of the board.



11. Install the top cover to the PCI module.

12. Install the PCI module.

13. Connect the network cable and option cables.

14. Close the release lever.

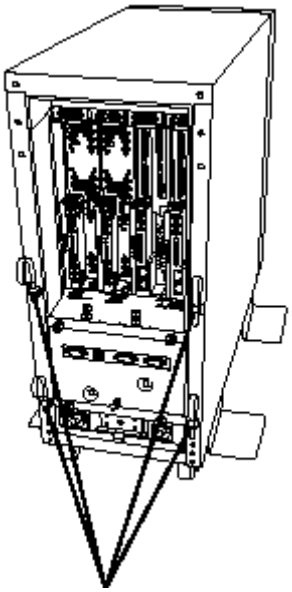
The installed PCI module will start automatically.

15. Secure the release lever with the setscrew.

16. Check the PCI module status LED and PCI board status LED.

For description of LED indications, see “LEDs” in Chapter 2 and “Setup of Optional PCI Board” later in this chapter.

17. Use cable ties to fasten the extra length of cables.



Cable ties (included with cabinet)

Removing PCI Board

Follow the procedure below to remove the PCI board.

1. Remove the PCI module.
2. Remove the PCI module's top cover.
3. Remove the PCI board retainer bracket to dismount the PCI board.

   In the case of a long board, unscrew the guide at the other edge and slide it to the front of the board.
4. Install the additional slot cover to the open slot.
5. Install the connector cover to the relevant slot.
6. Attach the PCI board retainer bracket.
7. Install the PCI module's top cover.
8. Install the PCI module.

   Do not close the release lever yet.
9. Connect the network cable and option cables.
10. Close the release lever.

    The installed PCI module will start automatically.
11. Secure the release lever with the setscrew.
12. Check the PCI module status LED and PCI board status LED.

    For description of LED indications, see "LEDs" in Chapter 2 and "Setup of Optional PCI Board" later in this chapter.

Replacing PCI Board

Follow the procedure below to replace the failed PCI board.

1. Check the PCI board LED and identify the failed PCI board.

   When the PCI board is failed or incorrectly installed, the two LEDs associated with the PCI board slot are being turned off.

2. Remove the PCI module.
3. Remove the PCI module's top cover.
4. Remove the PCI board retainer bracket to dismount the PCI board.

   In the case of a long board, unscrew the guide at the other edge and slide it to the front of the board.

5. Replace the board and fasten it.
6. Install the PCI module's top cover.
7. Install the PCI module.

   Do not close the release lever yet.

8. Connect the network cable and option cables.
9. Close the release lever.

   The installed PCI module will start automatically.

10. Secure the release lever with the setscrew.
11. Check the PCI module status LED and PCI board status LED.

    For description of LED indications, see "LEDs" in Chapter 2 and "Setup of Optional PCI Board" later in this chapter.

Setup of Optional PCI Board

IMPORTANT:

- To enable the fault-tolerant feature of the optional device, the identical devices must be installed to the same slots in groups 1 and 2, respectively.
- A video board is already installed to slot #1 as standard configuration. This board may not be removed or replaced with any other board.
- Change the BIOS settings. For some optional PCI boards you may need to start up the BIOS setup utility to change the [Boot Monitoring Time-out Period] configuration in [Advanced] – [Monitoring Configuration]. For more details, see page 4-15.

N8804-001P1 100BASE-TX Adapter Set

IMPORTANT: Note the following about this product:

- For LAN cable's connector, use the RJ-45 connector which is compliant with IEC8877 standard. Using a different connector may make it difficult to remove the connector.

- Slots to install the board

N code	Name	PCI slot						Remarks
		Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	
N8804-001P1	100BASE-TX Adapter set	–	√	√	–	√	√	

√: Can be installed. –: Cannot be installed.

- Installation of driver

  The NEC Express5800/ft series duplicates one or two pairs of 100BASE-TX adapter sets (N8804-001P1) before using.

  After installing Operating System, install the drivers in the following procedure and make dual settings of the PCI board.

  TIPS: To perform this procedure, you have to log on the system as an Administrator or a member of the Administrators group.

  After installing the OS, follow the steps below to install a driver and establish a dual configuration:

1. Mount the N8804-001P1 100BASE-TX adapter to the slot with the same number in PCI module #1 and #2, and then start Windows Server 2003, Enterprise Edition.

After starting Windows Server 2003, Enterprise Edition, the drivers are installed automatically.

IMPORTANT: If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Build a dual LAN configuration. (See "Setting Dual LAN Configuration" in the separate volume “User’s Guide (Setup).”)

IMPORTANT:

- You can also select [Load Balancing] in step 3 in "Setting Dual LAN Configuration". In this case, [Team #1:Adaptive Load Balancing Mode] is added to Network Component Tree.
- Moreover, select [Stratus AA-U51500 10/100 Enet Adapter] instead of [Stratus emb-82559 10/100 Enet Adapter] in Steps 4 and 5.
- If you build a dual configuration by using two pairs of adapters in Step 5, add an adapter in the same way.

- PCI Board Status LED Indications

LED indications	Description	Action
Green	Duplex is specified, however, the server works in simplex mode.	Specify duplex (AFT, ALB). Specify an appropriate driver.
Off	PCI board is properly installed and operates in non-duplex mode (AFT, ALB). (Does not depend on simplex or duplex.)	In non-duplex mode, no special problem occurs.
	PCI board is installed to operate in the duplex mode.	The system is operating normally in duplex mode.
	The PCI board is not installed yet, the PCI board is installed incorrectly, or the power is not supplied.	Mount the PCI board correctly. If the PCI board was not mounted, there is no problem. Check the condition of power unit. Remount the PCI module.
Red	In the process of configuring or canceling the duplex mode.	Wait for a while until the indication changes. If the indication unchanged, check the PCI board slot status using NEC ESMPRO Manager.
	Although the PCI board is mounted, it may be offline or not be working.	Make the slot of the board installed from NEC ESMPRO Manager online. Mount the PCI board correctly.

N8803-031F Fibre Channel Controller

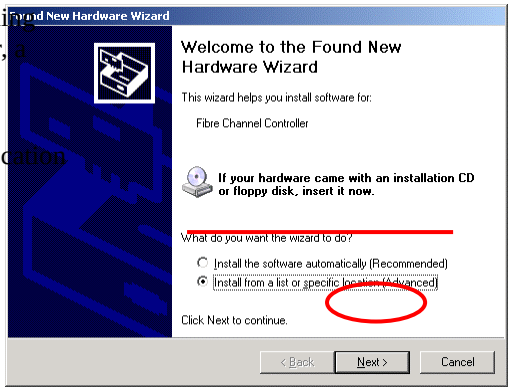
- Slots to install the board

N code	Name	PCI slot						Remarks
		Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	
N8803-031F	Fibre Channel Controller	–	√	√	–	√	√	Each PCI module can contain one board only. Only one of them can be mounted. (cannot be mounted together)

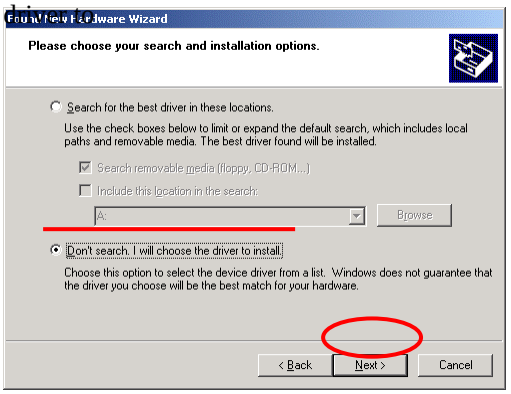
√: Can be installed. –: Cannot be installed.

- Installation of driver

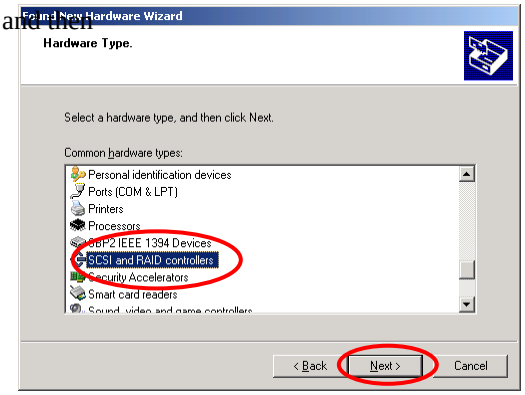
1. When you start the system after installing N8803-031F Fibre Channel Controller, a wizard to detect new hardware will automatically start up.
2. Select [Install from a list of specific location (Advanced)], and then click [Next].


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Fibre Channel Controller
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

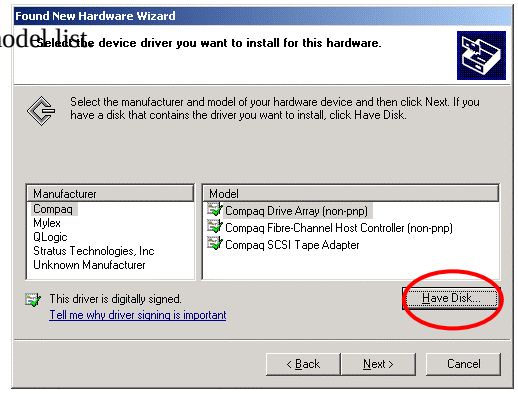
3. Select [Don't search. I will choose the driver to install.], and then click [Next].


Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
A:
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

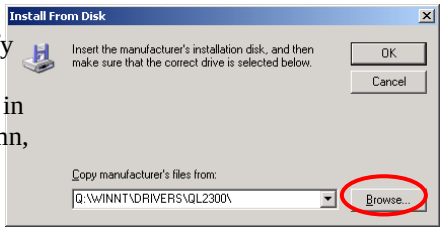
4. Select [SCSI and RAID controller], and then click [Next].



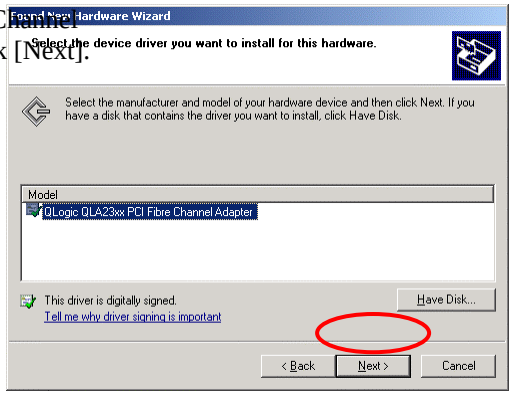
5. Do not select a driver listed on the model list. Click [Have Disk…].


Found New Hardware Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Manufacturer
Compaq
Mylex
QLogic
Stratus Technologies, Inc
Unknown Manufacturer
Model
Compaq Drive Array (non-pnp)
Compaq Fibre-Channel Host Controller (non-pnp)
Compaq SCSI Tape Adapter
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

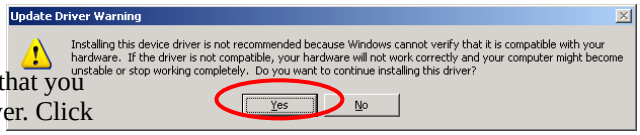
6. Insert NEC EXPRESSBUILDER into the CD-ROM drive, and click [Browse], specify the “CD-ROM drive:\WINNT\DRIVERS\QL2300” folder in the “Copy manufacture’s files from:” column, and then click [OK].



7. Select [Qlogic QLA23xx PCI Fibre Channel Adapter] on model list, and then click [Next].

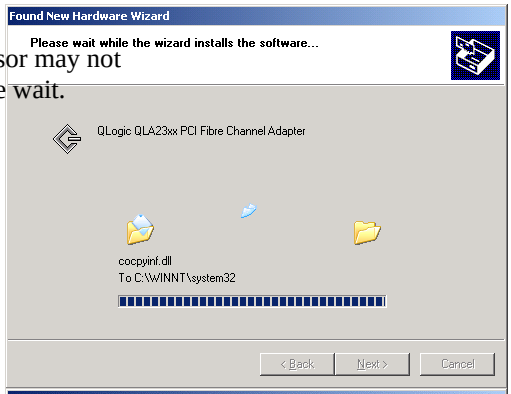

Found New Hardware Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Model
QLogic QLA23xx PCI Fibre Channel Adapter
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

8. A warning message tells that you are about to update a driver. Click [Yes] to continue.


Update Driver Warning
Installing this device driver is not recommended because Windows cannot verify that it is compatible with your hardware. If the driver is not compatible, your hardware will not work correctly and your computer might become unstable or stop working completely. Do you want to continue installing this driver?
Yes
No

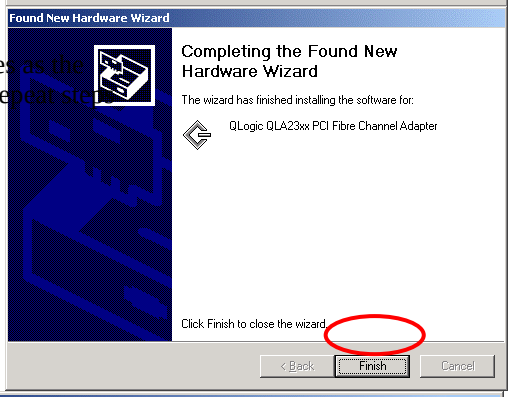
The driver will be installed.

* During the processing, the mouse cursor may not be moved for 10 to 20 seconds. Please wait.

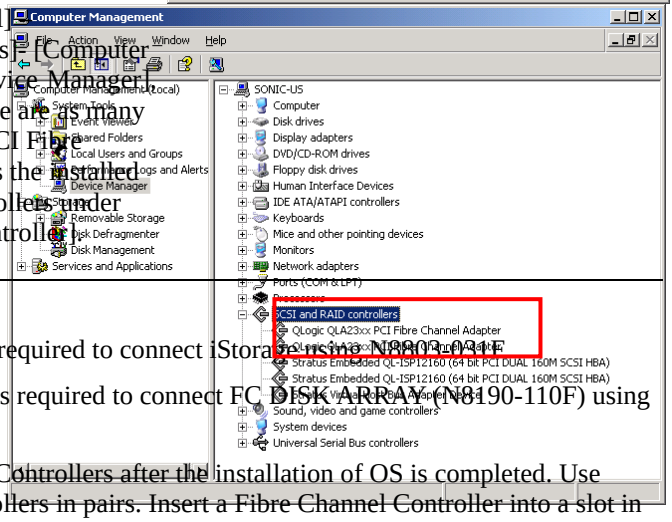


9. Click [Finish].

* This wizard will start up as many times as the installed Fibre Channel controllers. Repeat steps 1 to 10. .


Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
QLogic QLA23xx PCI Fibre Channel Adapter
Click Finish to close the wizard.
< Back
Finish
Cancel

10. Select [Control Panel] – [Administrative Tools] – [Computer Management] – [Device Manager] and confirm that there are as many [Qlogic QLA23xx PCI Fibre Channel Adapter]s as the installed Fibre Channel Controllers under [SCSI and RAID controller].



IMPORTANT:

- StoragePathSavior is required to connect iStorage using N8803-031F.
- PortDuplexManager is required to connect FC DISK ARRAY(N8190-110F) using N8803-031F.
- Insert Fibre Channel Controllers after the installation of OS is completed. Use Fibre Channel Controllers in pairs. Insert a Fibre Channel Controller into a slot in a PCI module and another Fibre Channel Controller into the slot at the same location in another PCI module.

- How to confirm the status:

Use StoragePathSavior (when iStorage is connected) or PortDuplexManager (when N8190-110F is connected) to check Fibre Channel Controller statuses, instead of viewing PCI board statuses.

N8104-84 1000BASE-SX Adapter

Consult your sales personnel for details when purchasing this hardware.

IMPORTANT: Note the following about this product:

- It is advisable to add this product to such environment that each system is used for a different purpose (ex. system line, maintenance, monitoring) and multiple accesses do not occur simultaneously.
- If there are multiple accesses, the processing power and transmission speed may be somewhat affected.

- Slots to install the board

N code	Name	PCI slot						Remarks
		Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	
N8104-84	1000BASE-SX Adapter	–	√	√	–	√	√	Each PCI module can contain one board only.

√: Can be installed. –: Cannot be installed.

- Installation of driver

The NEC Express5800/ft series uses a pair of N8104-84 boards in duplex mode.

After installing the drivers in the following procedure, perform a dual configuration setup.

IMPORTANT: Please use the CD-ROM for NEC Express5800/ft series for installation. If you use the floppy disk provided with the network card, it will not operate properly. (PROSetII will not start.)

TIPS: To perform this procedure, you have to log on the system as an Administrator or a member of the Administrators group.

After installing the OS, follow the steps below to install a driver and establish a dual configuration:

1. Mount the N8104-84 adapter to the slot with the same number in PCI module #1 and #2, and then start the Windows Server 2003, Enterprise Edition.

   After starting Windows Server 2003, Enterprise Edition, the drivers are installed automatically.

   IMPORTANT: If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Build a dual LAN configuration. (See "Setting Dual LAN Configuration" in the separate volume “User’s Guide (Setup).”)

IMPORTANT:

- You can also select [Load Balancing] in step 3 in "Setting Dual LAN Configuration". In this case, [Team #1:Adaptive Load Balancing Mode] is added to Network Component Tree.
- Moreover, select [Stratus AA-U5700 Fiber Gigabit Server Adapter] instead of [Stratus emb-82559 10/100 Enet Adapter] in Steps 4 and 5.

- PCI Board Status LED Indications

LED indications	Description	Action
Green	Duplex is specified, however, the server works in simplex mode.	Specify duplex (AFT, ALB). Specify an appropriate driver.
Off	PCI board is properly installed and operates in non-duplex mode (AFT, ALB). (Does not depend on simplex or duplex.)	In non-duplex mode, no special problem occurs.
	PCI board is installed to operate in the duplex mode.	The system is operating normally in duplex mode.
	The PCI board is not installed yet, the PCI board is installed incorrectly, or the power is not supplied.	Mount the PCI board correctly. If the PCI board was not mounted, there is no problem. Check the condition of power unit. Remount the PCI module.
Red	In the process of configuring or canceling the duplex mode.	Wait for a while until the indication changes. If the indication unchanged, check the PCI board slot status using NEC ESMPRO Manager.
	Although the PCI board is mounted, it may be offline or not be working.	Make the slot of the board installed from NEC ESMPRO Manager online. Mount the PCI board correctly.

N8104-103 1000BASE-T Adapter

Consult your sales personnel for details when purchasing this hardware.

IMPORTANT: Note the following about this product:

- It is advisable to add this product to such environment that each system is used for a different purpose (ex. system line, maintenance, monitoring) and multiple accesses do not occur simultaneously.
- If there are multiple accesses, the processing power and transmission speed may be somewhat affected.
- For LAN cable's connector, use the RJ-45 connector which is compliant with IEC8877 standard. Using a different connector may make it difficult to remove the connector.

- Slots to install the board

N code	Name	PCI slot						Remarks
		Group 1			Group 2			
		#1	#2	#3	#1	#2	#3	
N8104-103	1000BASE-T Adapter	–	√	√	–	√	√	Each PCI module can contain one board only.

√: Can be installed. –: Cannot be installed.

- Installation of driver

  The NEC Express5800/ft series uses a pair of N8104-103 boards in duplex mode.

  After installing the drivers in the following procedure, perform a dual configuration setup.

  IMPORTANT: Please use the CD-ROM for NEC Express5800/ft series for installation. If you use the floppy disk provided with the network card, it will not operate properly. (PROSetII will not start.)

  TIPS: To perform this procedure, you have to log on the system as an Administrator or a member of the Administrators group.

  After installing the OS, follow the steps below to install a driver and establish a dual configuration:

  1. Mount the N8104-103 adapter to the slot with the same number in PCI module #1 and #2, and then start the Windows Server 2003, Enterprise Edition.

     After starting Windows Server 2003, Enterprise Edition, the drivers are installed automatically.

     IMPORTANT: If the [Digital Signature Not Found] dialog box appears, click the [Yes] button.

2. Build a dual LAN configuration. (See "Setting Dual LAN Configuration" in the separate volume “User’s Guide (Setup).”)

IMPORTANT:

- You can also select [Load Balancing] in step 3 in "Setting Dual LAN Configuration". In this case, [Team #1:Adaptive Load Balancing Mode] is added to Network Component Tree.
- Moreover, select [NEC 8490XT Copper Gigabit Adapter] instead of [Stratus emb-82559 10/100 Enet Adapter] in Steps 4 and 5.

- PCI Board Status LED Indications

LED indications	Description	Action
Green	Duplex is specified, however, the server works in simplex mode.	Specify duplex (AFT, ALB). Specify an appropriate driver.
Off	PCI board is properly installed and operates in non-duplex mode (AFT, ALB). (Does not depend on simplex or duplex.)	In non-duplex mode, no special problem occurs.
	PCI board is installed to operate in the duplex mode.	The system is operating normally in duplex mode.
	The PCI board is not installed yet, the PCI board is installed incorrectly, or the power is not supplied.	Mount the PCI board correctly. If the PCI board was not mounted, there is no problem. Check the condition of power unit. Remount the PCI module.
Red	In the process of configuring or canceling the duplex mode	Wait for a while until the indication changes. If the indication unchanged, check the PCI board slot status using NEC ESMPRO Manager.
	Although the PCI board is mounted, it may be offline or not be working.	Make the slot of the board installed from NEC ESMPRO Manager online. Mount the PCI board correctly.

Supplement

Before using backup devices:

If any of following backup devices is used for internal SCSI connector of NEC Express5800/ft series, you may need to update your firmware for backup devices.

If your backup device to be connected is any of the following models, refer to the manual_E.pdf in your attached NEC Express Builder (CD-ROM). That file describes detailed procedures to update your firmware.

List of backup devices and firmware

Model #	NEC Model Name	Latest Firmware Revision
N8151-29F	Built-In AIT Auto Loader	L1nb
N8151-34AF	Built-In AIT	07n6
N8151-36F	Built-In AIT Auto Loader	L7n7
N8151-39F	Built-In DAT Auto Loader	L2n4
N8151-45F	Built-In DAT	02n9
N8151-46F	Built-In AIT	01nm
N8151-41AF	Built-In AIT	01nm

All tape devices are needed to update the firmware if the firmware revision is older than above.

(This page is intentionally left blank.)

Appendix A

Specifications

Item		NEC Express5800/320Lc	NEC Express5800/320Lc-R
		N8800-063F	N8800-064F
CPU	Type	Intel® Xeon™ Processor × 1	
	Clock/second cache	2.8GHz/512KB	
	Number of processors	1 processor (the number of processors installed per module)	
	MAX	Up to 2 processors (the number of processors installed per module)	
Chipset		Server Works Server Set III GC-LE	
Memory	Standard	512MB (256MB × 2*) *Each module has two DIMMs in standard configuration.	
	Maximum	6GB (The standard DIMM must be replaced.)	
	Expansion unit	2 DIMMs (256MB × 2/ 512 MB × 2)	
	Memory module	DDR200 SDRAM DIMM (Registered Type)	
	Error check	ECC	
Graphics (VRAM)		CT69000 (VRAM 2MB)	
Auxiliary input device	Floppy disk (standard)	3.5-inch drive × 1 (USB)	
	Hard disk (standard)	None	
	Hard disk (maximum)	879.0GB* (146.5GB × 6) * The user area is reduced to a half of the physical capacity due to software mirroring.	
	CD-ROM (standard)	ATAPI interface × 1 (Load on tray type, x24 speed) A ready drive is indicated by POWER LED of that PCI module.	
File bay	5.25 inch	None	
	3.5 inch	6 slots	
Additional slot	PCI	6 slots (2 slots are used for graphics board.)	
LAN interface		1000BASE-T/100BASE-TX/10BASE-T (2 ports); 100BASE-TX/10BASE-T (2 ports)	
External interface	USB	4-pin (2 ports) 2 ports are used by keyboard and external USB FDD.	
	SCSI	VHDCI 68-pin connector (2 ports)	
	Serial	D-sub 9-pin (2 ports)	
	Network	RJ-45 (4 ports)	
	Display	MINI D-sub 15-pin (1 port)	
Cabinet design		Deskside and mini-tower	Rack-mount type
External dimensions		222 (width)* × 560 (height) × 795 (depth) mm *370mm if stabilizers included	480 (width) × 177 (height) × 790 (depth) mm
Weight		68 kg (Max. 73kg)	56 kg (Max. 61kg)
Power supply		100 to 120 VAC ±10%, 200 to 240 VAC ±10%, 50/60 Hz ±1 Hz	
Power consumption		880 VA, 870 W	
Environmental requirements	In operation	Temperature 10 to 35°C Humidity 20 to 80% RH (non-condensing)	
	In storage	Temperature -10 to 55°C Humidity 20 to 80% RH (non-condensing)	

(This page is intentionally left blank.)

Appendix B

I/O Port Addresses

The factory-set I/O port addresses for the server are assigned as follows:

Address	Chip in Use
00-1F	8-bit DMA control register
20-21	Master 8259 programming interface
2E-2F	Configuration
40-43	8254 programming interface
60	Keyboard & mouse
61	NMI status register
64	Keyboard & mouse
70-71	NMI enable register/real-time clock
80-8F	16-bit DMA control register
A0-A1	Slave 8259 programming interface
C0-DF	DMA controller page register
E0-E9	Base address register
F0	Register IRQ13
F1-FF	Logical device configuration
170-177 or BAR2	EDMA2-compatible mode primary command block register
1F0-1F7 or BAR0	EDMA2-compatible mode secondary command block register
278-27F	(Parallel port 3)
2F8-2FF	Serial port B
BAR or 376	EDMA2-compatible mode secondary command block register
370-377	(Floppy disk drive 2), IDE 2
378-37F	(Parallel port 2)
3B0-3BB	VGA
3BC-3BE	Parallel port 1
3C0-3DF	VGA
3F6 or BAR1	EDMA2-compatible mode primary command block register
3F0-3F7	(Floppy disk drive 1), IDE 1
3F8-3FF	Serial port A
40B	DMA1 expansion write mode register
4D0	Master 8259 ELCR programming
4D1	Slave 8259 ELCR programming
4D6	DMA2 expansion write mode register
580-58F	SMBus control
C00	PCI IRQ mapping index register
C01	PCI IRQ mapping data register
C14	PCI error status register
C49	Address & status control
C4A	Rise time counter control
C52	General register (GPMs)
C6C	ISA wait register
C6F	Other control registers
CA2-CA3	IPMI (IMPI KCS interface)

Address	Chip in Use
CA4-CA5	IPMI (SMI interface)
CA6-CA-7	IPMI (SCI/SW1 interface)
CD6	Power management index register
CD7	Power management data register
CF8, CFC	PCI configuration space
CF9	Reset control
F50-F58h	General chipset
BAR4+00-0F	EDMA2 PCI base address register 4

* Expressed in hexadecimal digits.
* I/O port addresses of PCI devices are specified based on the type and number of PCI devices.